

# COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

Reg. U. S. Pat. Off.

Acceptance under the Act of June 5, 1934, authorized December 18, 1934.  
Published monthly.

Member C.C.A.

Vol. LIX Philadelphia, May, 1940 No. 3

## Editorial Department

JULIAN CHASE, *Directing Editor*

GEORGE T. HOOK, *Editor*

C. B. RAWSON HENRY JENNINGS HOWARD KOHLBRENNER  
Managing Editor Technical Editor Art Editor

EDWARD L. WARNER, JR. JOSEPH GESCHELIN  
Detroit News Editor Detroit Technical Editor

MARCUS AINSWORTH, *Statistician*

L. W. MOFFETT & J. G. ELLIS, *Washington News Editors*  
B. M. IKERT, *Chicago Technical Editor*

## EDITORIAL CONTENTS

Copyright 1940, by Chilton Company (Inc.)

### Feature Articles

Trucks Overpay Their Way .....	20
The Octane Numbers Game .....	22
Brother . . . Can You Spare a Line? .....	24
A Discussion of Truck Ratings .....	28
Efficiency Comes First .....	30
Fleetmen's Forum .....	32
Pointers on Setting Points .....	34
A Case Study .....	46

### Descriptions

Chevrolet Dubl-Duty Package Delivery .....	38
Studebaker Champion Sedan Delivery .....	38
Bird-White Dumper and Tower Lift .....	40
Buda 6-Cylinder Diesel for Ford Trucks .....	40

### Departments

Legislative Lookout .....	17
After Hours .....	18
CCJ Quiz .....	18
Ears to the Ground .....	18
Shop Hints from Fleet Shops .....	26
The Body of the Month .....	36
New Truck Registrations .....	40
Showcase of New Products .....	42
CCJ Newscast .....	48
Free Money Savers for You .....	74
Free Books, Catalogs, etc. ....	89
Advertisers' Index .....	118

### Automotive Division

JOS. S. HILDRETH, *President and Manager*

JULIAN CHASE, *Vice-Pres.* G. C. BUZBY, *Vice-Pres.*

### OFFICES

Philadelphia—Chestnut & 56th Sts., Phone Sherwood 1424. New York—239 W. 39th St. Phone Pennsylvania 6-1100. Chicago—Room 916, London Guarantee & Accident Bldg., Phone Franklin 4243. Detroit—1015 Stephenson Bldg., Phone Madison 2090. Cleveland—609 Guardian Bldg., Phone Cherry 4188. San Francisco—444 Market St., Room 305, Phone Garfield 1721. Los Angeles—8000 Miramonte Blvd., Phone Lafayette 5525. Long Beach, Cal.—1535 Pacific Ave., Phone Long Beach 613-233. Washington, D. C.—Room 1061 National Press Bldg., Phone District 6877.

**SUBSCRIPTION RATES:** United States and United States Possessions and all Latin-American countries—\$3.00 per year. Canada and Foreign—\$4.00 per year. Single copies—40 cents.

Owned and Published by  
**CHILTON COMPANY**  
(Incorporated)



### Executive Offices

Chestnut and 56th Streets, Philadelphia, Pa., U. S. A.

### Officers and Directors

C. A. MUSSELMAN, *President*  
Vice-Presidents

JOS. S. HILDRETH  
EVERETT B. TERHUNE

C. S. BAUR

GEORGE H. GRIFFITHS  
J. H. VAN DEVENTER

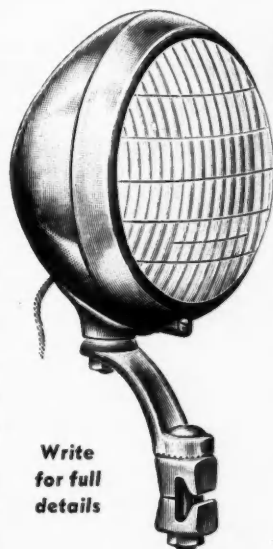
WILLIAM A. BARBER, *Treasurer* JOHN BLAIR MOFFETT, *Secretary*  
JULIAN CHASE THOMAS L. KANE G. C. BUZBY  
P. M. FAHRENDORF HARRY V. DUFFY CHARLES J. HEALE

COMMERCIAL CAR JOURNAL  
May, 1940

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL. Vol. LIX, No. 3. Published monthly by Chilton Co., N. W. Cor. Chestnut & 56th Sts., Philadelphia, Pa. Subscription price: United States and Possessions, Mexico and Latin American Countries, \$3.00 per year; Canada and Foreign, \$4.00 per year. Single copies, 40¢, except April Issue, \$1.00. Acceptance under the Act of June 5, 1934, authorized December 18, 1934.

And Now... WE'RE SATISFIED!  
WE RECOMMEND AS ABSOLUTELY PRACTICAL



Write  
for full  
details



**SOLAR  
DRIVING AND  
PASSING LAMPS**

## SEALED TYPE

Metal and glass construction same as used in 1940 original equipment lamps.

Tamper-proof, weatherproof optical assembly assuring lasting efficiency and accuracy without strain on generator and lighting equipment. Installed in pairs, furnished complete.

Tested — Approvals Applied for

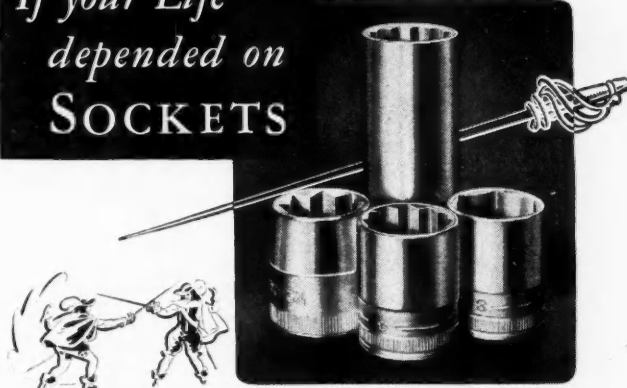
Model No. 861 for DRIVING and PASSING with crystal lens

Model No. 865 for ADVERSE WEATHER with DUAL-TONE lens of crystal and amber

Members by invitation . . . Rice Leaders of the World Assn.

**The K-D LAMP Co.**  
CINCINNATI, OHIO

If your Life  
depended on  
**SOCKETS**



. . . you'd check on the steel in those sockets, on the way they were broached, shaped, hardened. Lives do depend on sockets . . . on the way nuts are turned and tightened. So for safety's sake, for the reduction of "lay-up" time . . . insist on the use of good sockets for servicing commercial vehicles in your shop. Snap-on sockets, like famous swords of old, are noted for fine steel. Snap-ons are electric furnace toughened for high tensile strength without brittleness, hardened all the way through, HOT-broached for clean-edged, non-slip grip, precision machined for fit and finish. And Snap-on originated sockets, today makes the world's largest selection of styles and sizes. For full information write . .

**SNAP-ON TOOLS  
CORPORATION**

Dept. CCJ-5

Kenosha, Wisconsin

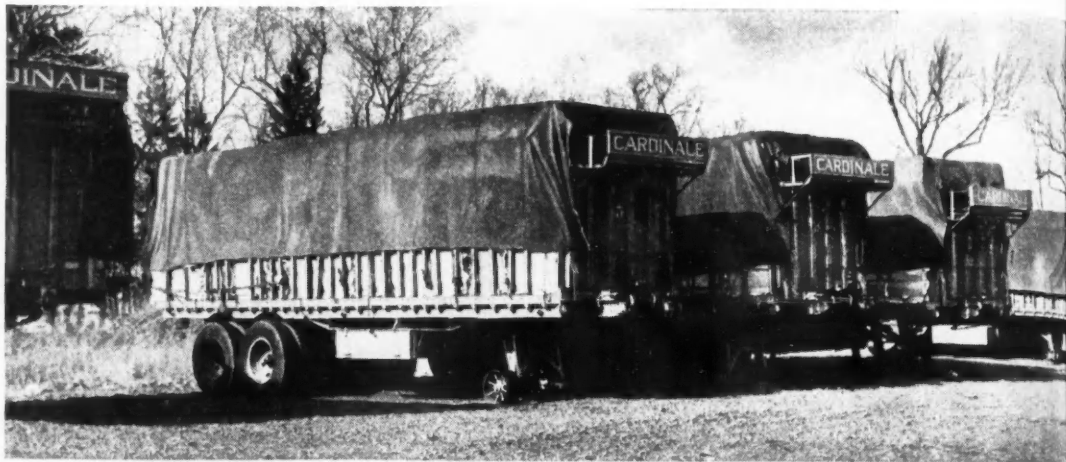


**Snap-on**  
**SERVICE TOOLS**

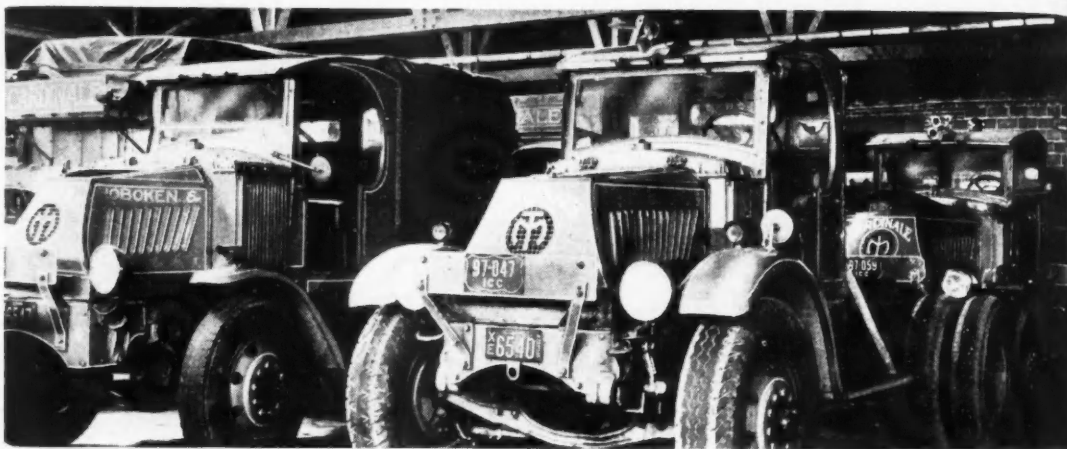
The Choice of Better Mechanics

# NOT A WHEEL

**CARDINALE TRUCKING CORP.'S FLEET** consists of 85 tractor-trailer units. It hauls paper and paper stock between the mills and warehouses. 40-50,000 is yearly mileage.



**THE CARDINALE FLEET** is made up of Mack and Brockway tractors, and Fruehauf trailers equipped with automatic hook-up. The entire fleet lubricated with *Texaco Marjak* . . . for 10 years.



**CARDINALE** is one of the largest fleet operators in northern New Jersey, maintaining complete chassis overhaul and body building facilities of their own. *Texaco Marjak* in use 100%.



# TEXACO

*When writing to advertisers please mention Commercial Car Journal*

COMMERCIAL CAR JOURNAL  
MAY, 1940



# COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS



## LEGISLATIVE LOOKOUT

**Congress considers Forwarder Bills and S.2009; States begin mopping up 1940 legislation; Reciprocity gets attention**

**W**RAPPED in the throes of its peacetime-high, billion-dollar Navy Bill, it is small wonder that Congress has had little time for matters pertaining to highway transportation—and that goes even for the toll road and superhighway projects.

Two bills, however, of vital interest to freight forwarders, have been introduced in the Senate by Senator Reed. Both bills, S.3665 and S.3666 pertain to the regulation of this type of trucking. One is essentially the draft of ICC Chairman Eastman, submitted about a month ago; the other was submitted by the Freight Consolidators and Forwarders Institute. Major points of difference involve

the making of joint rates with other types of carriers and common control of a forwarding company and a carrier. The Eastman bill prohibits both; the Institute bill authorizes both. Companion bills, H.R.9089 and H.R.9090 have been introduced in the House.

Meanwhile an almost-complete compromise version of S.2009, the omnibus transportation bill, was reported on capitol hill. Senate Majority Leader Barkley, after a recent White House conference, predicted that an agreement would be reached soon on this bill.

Indications at this writing, subject to future confirmation and develop-

ments would point to the fact that the conference committee version of S. 2009 has rejected the Senate plan for codification, hence will follow the general pattern of the House substitute bill. Further developments would indicate inclusion of inland water carriers under Part III, inclusion of the Senate plan for a transportation Board of three \$10,000-a-year-men, and inclusion of the amendments restricting the commission's power to limit the scope of motor carrier operations. Discussion of the Harrington Amendment, guaranteeing protection of employees in railroad consolidations, is still deadlocked at this writing.

S.3656, a new bill introduced by Senator Pepper, would prohibit common and other carriers from owning or acquiring any interest in a newspaper published in the United States.

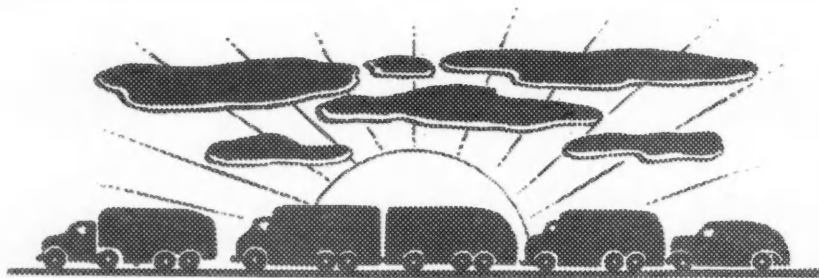
### Reciprocity

Ports of entry and the much-discussed problem of reciprocity among the states again received attention throughout the nation during the past month. In Washington, on March 23 before the Temporary National Economic Committee, M. B. Holifield, Assistant Attorney General of Kentucky defended his state's unusually low load limit on the grounds

(TURN TO PAGE 84, PLEASE)

# AFTER HOURS

Editorial Comments By George T. Hook, Editor



**1. Another impartial study—the subsidy report—exonerates motor vehicles of railroad charges and turns the tables on accusers. 2. Sizes and Weights**

**N**OTHING so satisfying as complete exoneration of the railroad charge of subsidy has happened to the trucking industry since 1933, when the National Transportation Committee headed by ex-President Calvin Coolidge made its famous declaration of policy.

The members of that committee were Mr. Coolidge, Alfred E. Smith, Bernard Baruch, Alexander Legge and Clark Howell. The committee made its study of transportation problems at the behest of a large group of insurance companies and institutions that were holders of railroad securities. Many of those securities were either depressed or in default and the railroads, of course,

were blaming "unrestricted competitors," particularly trucks. The impartial Coolidge Committee spanked the railroads and saluted motor vehicles. It delivered the spanking in these words:

"Much of the difficulty which the railroads ascribe to automotive and potential air and pipe line competition should and could have been relieved by an alert and aggressive railroad policy. We believe that if the railroads had regarded themselves more accurately as purveyors of transportation rather than as guardians of a monopoly, they would have been more alert to take advantage of every development in their field and that a more progressive policy might

have turned to their own distinct advantage the very things they now regard as a burden and a threat."

And the salute in these:

"One thing is certain. Automotive transportation is an advance in the march of progress. It is here to stay. We cannot invent restrictions for the benefit of railroads. We can only apply such regulation and assess such taxes as would be necessary if there were no railroads, and let the effect be what it may."

Those declarations did not daunt the railroads. They redoubled their subsidy accusations. So with railroad funds which were made available to the Federal Coordinator of Transportation by the Emergency Railroad Transportation Act of 1933, Mr. Eastman undertook the first broad, impartial study of the subsidy question raised by the railroads. The results of that study, just made public, are reported in succeeding pages of this issue.

Again an impartial study has resulted in a decision against the railroads. The railroads had charged that trucks were subsidized. The study proved it was railroads that enjoyed a billion and a half subsidy, and that highway vehicles as a whole and motor trucks as a group not only were not subsidized but had paid more than their just share of highway costs.

The study is definitely a solar plexus blow but the railroads, like the male object of Salvation Army charity, may be down but never out. They knew back in 1936, when they received a copy for comment, that the Federal Coordinator's report would be unfavorable. They tried to

## CCJ QUIZ

(Correct Answers on Page 84)

This is a "maybe" quiz. Here are ten statements, and your job is to test the universality of each of them. Maybe it's

"always"; maybe it's "never"; and maybe it's just "maybe." Check them off, and give yourself ten points for every correct answer. Maybe you'll get them all right and score a hundred . . . maybe.

1

Petroleum products are carbohydrates.

- a. All of them.
- b. Some of them.
- c. None of them.

2

Reo, Ford, Chevrolet, Dodge, and Federal have their main factories located in the state of Michigan.

- a. All of them.
- b. Some of them.
- c. None of them.

3

The even-numbered national highways run in a general North-South direction.

- a. All of them.
- b. Some of them.
- c. None of them.

4

CoMax, NoRol, Zerone, and Permite are manufactured by the Wagner Electric Corporation.

- a. All of them.
- b. Some of them.
- c. None of them.

5

Louisiana, Tennessee, Florida, North Carolina, and South Carolina levy a tax

minimize its effects by sponsoring the independent Breed-Older-Downs study which, with the help of the spurious public-utility-theory of highway cost evaluation, accused highway users of enjoying a 10-billion-dollar subsidy. They publicized that study widely in 1939 and early this year. But in an appendix to its report the Federal Coordinator's research staff took the railroad report for a ride which railroad men will never forget.

The railroads may be a bit dizzy right now but they are in there punching, and if the blows appear to be aimed below the belt they represent nothing new in railroad tactics. With dishonest statistics and honesty-impugning questions they are attacking what they term the basic assumption of the coordinator's study. "Why," they ask, "are highway costs allocated on the assumption that 60 per cent should be paid in taxes by farmers, home owners and others (in "others" they apparently include their favorite widows and orphans), and only 40 per cent by highway users? Why shouldn't it be the other way around?"

Naturally they expect such immundo to be effective because not one person in a thousand will be familiar with the facts. The facts are in the report but the railroads conveniently choose to ignore them. The weighted average allocated to highway users is 48.5 for all types of roads. Since 1933, the allocation for state highways has been 83 per cent; for county and local roads, 34 per cent, and for city streets, 30 per cent. In each case the allocation is rightly based on the degree of use and benefits derived.

But such sniping by the railroads merely emphasizes the truth of Mr. Eastman's assertion that railroad "contentions impress me as being carried to extreme limits." It cannot efface the fact that another impartial study by able men has found the railroads wanting and highway transportation a clean and worthy competitor.

#### Sizes and Weights

The U. S. Supreme Court declared in its decision upholding the constitutionality of Pennsylvania's law abolishing the car-over-cab transportation of automobiles, that the Federal Motor Carrier Act "imposes no duty and confers no authority" on the Interstate Commerce Commission to regulate the size and weight of vehicles. This statement should not dismay those who have looked to the I.C.C. to lead the way to size and weight uniformity on a national basis. The I.C.C. never asumed that it had the right to regulate sizes and weights. The Motor Carrier Act conferred on it the job of studying sizes and weights and making recommendations to Congress. That study, known officially as MC-15, will shortly be released, and will be the subject of hearings, before recommendations are made to Congress.

#### Private Carrier Report

At the moment of going to press there were indications that the I.C.C. decision with regard to hours of service for private carriers would be made public before the end of April. In Washington truck circles the belief was prevalent that the I.C.C. would assume a modified form of control.

# EARS

## TO THE GROUND

#### Ford Follow-up

There is something about Ford rumors that makes them particularly hardy. This department, a specialist in such matters, picked up the one about the Ford Six in the March issue and then informed you that informed sources thought the deal cold in the April issue. Now through other channels it has come to us that the Ford Six is not out but merely postponed so far as introduction this year is concerned. The postscript is that the Ford Six will be announced with the 1941 models.

#### Ford Fabrication

Our man in charge of hearings, etc., in Washington informs this department that Edsel Ford tossed off a few figures in testimony that would indicate a mechanical trend. According to Mr. Ford, and who should know better, the factory has spent \$880,000 for equipment to make cylinder liners and by the time you read this will have 500 men making and installing them.

#### Cushion Caper

Remember the Sewall cushion wheel of the good old days before World War No. 1? There is a modern development that brings the art up to date on light commercial vehicles. The wheel is made of steel stampings with mechanical rubber suspension parts. It is said to eliminate road shock, and relieve much of the hazard of skidding. It is not yet on the market but evidence of interest would certainly encourage its appearance.

#### Cement Carrier

Latest wrinkle in the cement hauling field is the development of a huge trailer body for transporting dry cement. The idea is to tote the cement in bulk and keep it dry without the use of bags or barrels, then dump it right at the job. This vehicle has a capacity of 25 tons.

#### Axle Agitation

Our mid-western agent came bursting in recently with the report of a brand new trailer axle of unique design, but regretfully reports that lips are sealed as to details. We can say that one is on the way and that it's expected before the end of the year.

#### Coming Carburetor

The same agent reports a new heavy-duty carburetor just about ready for announcement but guarded by equal secrecy. Details should be along on this one by next month.

of six cents or more on each gallon of gasoline sold.

- All of them.
- Some of them.
- None of them.

6

Modern storage batteries use sulphur dioxide as an electrolyte.

- All of them.
- Some of them.
- None of them.

7

International, White, and Mack put new models on the market yearly.

- All of them.
- Some of them.
- None of them.

8

Aluminum, cast iron, chrome nickel,

and magnesium are good materials for the manufacture of pistons.

- All of them.
- Some of them.
- None of them.

9

Last year's auto shows were held between October 15 and October 28.

- All of them.
- Some of them.
- None of them.

10

Stromberg, Feragen, Weiss, Cowdrey, and Eclipse are familiar as the second half of the Bendix hyphen.

- All of them.
- Some of them.
- None of them.



# TRUCKS OVERPAY THEIR WAY



SEVEN years of toil, financially aided by those die-hard opponents of motor trucks, the railroads, and begun back in 1933 by Joseph B. Eastman, then Federal Coordinator of Transportation and now chairman of the Interstate Commerce Commission, came to an end on April 15, 1940. On that day Mr. Eastman released a four-volume report entitled "Public Aids to Transportation." Ironically the report showed that its financial angels—the railroads—have enjoyed public aids amounting to \$1,443,000,000, and that contrary to the widely publicized subsidy claims of those same railroads, highway users have overpaid their just share of road costs by the comfortable sum of \$385,361,000.

The Federal Coordinator's research staff, headed by Dr. Charles S. Morgan, for years attached to the Interstate Commerce Commission as a research economist and now assistant director of the I.C.C. Bureau of Motor Carriers, approached its study of the controversial subsidy question in an impartial spirit.

"It is a question," Mr. Eastman says in his foreword to the report, "which the railroads particularly have brought to the front. They complain bitterly that the competition of motor carriers, many of the water lines, and the air carriers is unfair because it is 'subsidized' at the expense of the public treasury."

So the Federal Coordinator under-



By

**GEORGE T. HOOK**

Editor, Commercial Car Journal

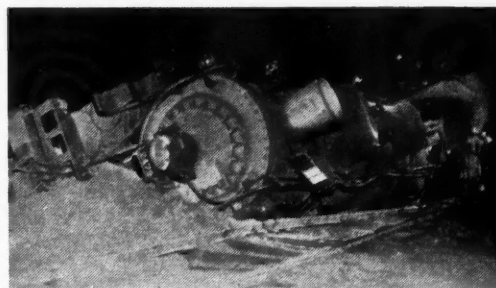
**Subsidy study, begun by Eastman as Federal Coordinator of Transportation, is released and shows highway users overpaid their share of road costs by 385 millions while rails got billion and a half in public aid**

took the investigation of the question "with the sole desire to ascertain and interpret all the pertinent facts as fully and fairly as possible, regardless of whom they might help or hurt."

The report is its own proof that the research staff was faithful to that trust. Impartiality, thoroughness and dispassionate appraisal of facts,

theories and estimates are to be seen on every page. Conservatism and generosity find their way into some conclusions but their indulgence simply emphasizes the impartiality of the study.

Highway users may conclude that conservatism was practised at their expense and complain that treatment (TURN TO PAGE 76, PLEASE)



## HIGHWAY USERS PAY MORE THAN FAIR SHARE OF COSTS

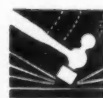
Comparison of Costs per Vehicle, by Vehicle Groups, as Finally Derived with Payments Made, 1932

Class of Motor Vehicle and Rated Capacity	Cost per vehicle	Payments per vehicle	Payments minus assignable costs
Passenger cars	\$ 26	\$ 26	....
Taxicabs and other for-hire cars	61	81	\$ 20
School buses	82	77	- 5
Contract buses (seats):			
7 and less	41	56	15
8 to 20	46	113	67
Over 20	59	178	119
Common carrier buses (seats):			
7 and less	126	143	17
8 to 20	142	290	148
Over 20	188	437	249
Trucks (capacities in tons):			
Private: Farm	20	25	5
Other private:			
1½ and less	53	48	- 5
Over 1½ and less than 3, single	67	92	25
Over 1½ and less than 3, combination	104	133	29
3 and less than 5, single	151	185	34
3 and less than 5, combination	129	206	77
5, single	287	256	-31
5, combination	311	277	-34
Over 5, single	316	358	42
Over 5, combination	372	457	85
For-hire:			
1½ tons and less	102	105	3
Over 1½ and less than 3, single	152	178	26
Over 1½ and less than 3, combination	157	226	69
3 and less than 5, single	251	282	31
3 and less than 5, combination	193	349	156
5, single	457	403	-54
5, combination	457	465	8
Over 5, single	499	594	95
Over 5, combination	545	832	287

Minus sign represents excess of costs over payments.

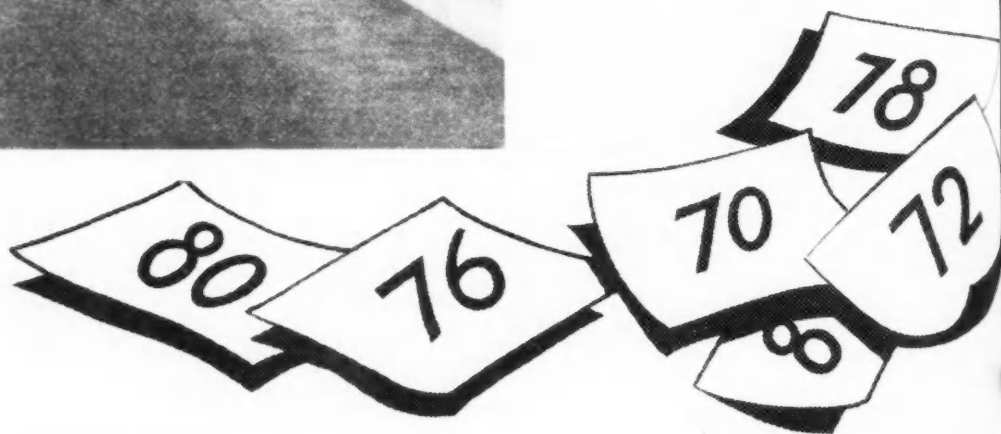
## SUBSIDY REPORT WRECKS RAILROAD CONTENTIONS

- Public aid to railroads up to 1936 amounted to \$1,443,000,000. In the year 1936 public aids amounted to \$35,635,000.
- Land grants to railroads equalled 9½ per cent of the total area of continental United States.
- Water transportation received \$128,528,000 in public aids in 1935.
- Air transportation received \$21,010,000 in public aid in 1936.
- Aid to pipelines was negligible.
- Highway transportation overpaid its share of road costs \$385,361,000 in the period 1921-1937. In the year 1937 highway users overpaid their share of costs by \$110,722,000.
- Analysis of payments in the year 1932 showed that: Passenger cars neither overpaid nor underpaid. Underpayments were made by school buses, by private trucks of 1½ tons and less, 5 tons single and 5 tons combination, and by for-hire trucks of 5 tons single.  
Total underpayments of the above vehicle classes were \$8,000,000.  
All other classes of vehicles overpaid.
- Gasoline and oil taxes paid to the Federal Government were not included in highway user payments.
- The Breed, Older, Downs highway cost study advancing the public utility theory was referred to as the "railroad report" and denounced as being full of overstatements, inconsistencies, confusions of statements, and as a discussion in impractical terms to which "more consideration has been given than it appears to merit."
- Quote by Eastman: "The railroads have had the opportunity to express to me, both orally and in writing, their views on highway carriers. Their contentions impress me as being carried to extreme limits."



SOME fleet operators have come to think that the octane number is no more a description of the anti-knock quality of gasoline than is "chic" descriptive of the hat with which a wife might upset the personal budget. Their loss of confidence in octane number as a measuring stick is well founded from their point of view. For years they have been buying gasoline with no reason to doubt the accuracy of the octane number as an index of knocking quality. But recently they have encountered a conversational spread of perhaps as much as 10 octane numbers in fuels that give them about the same performance in their vehicles.

Let it be said right at the beginning that this state of affairs is not a diabolical scheme on the part of the oil companies to confound fleet operators in selecting gasoline. It is an outgrowth of the fact that four methods are used by gasoline vendors to determine the octane number of gasoline. Each of these methods are a sincere attempt to rate the anti-knock quality of gasoline in a fair way, considering the service in which the gasoline is to be used. These four



# THE OCTANE NUMBERS



methods give varying results with the same gasoline; in fact, they give identical ratings to the same gasoline so infrequently that when it happens it is considered an accident.

The original thinking in the oil business that has been responsible for so much progress in that industry is responsible for the variety of octane testing methods, so it would not be fair for the fleet operator to be too critical of the temporary confusion. Already efforts are being made among refiners to standardize on a method of testing which will be fair for all. Quite naturally so long as different methods give different results this will be quite a task. The adherents of each method have what they consider good reasons for their choice and they are not apt to abandon their reasoning without due deliberation.

With the four methods giving varying results it is natural that each refiner should test his gasoline with all four methods despite lack of faith in some of them. When his gasoline rates high on one method this information gets to the sales department where it is well publicized regardless of the fact that the gasoline may not

reach so high an octane number by any of the other methods. Are the sales departments then to blame for the confusion? What would you do if you were selling gasoline? Remember, each method of testing gasoline for octane rating has a respectable standing among the more substantial members of the oil industry.

The four methods of determining the octane number of gasoline are known as the A.S.T.M. Method, the L-3 Method, the Research Method and the Road Method.

In each of the first three methods a gasoline of unknown octane number is run through an engine equipped with a diaphragm which reacts to the knock. The diaphragm actuates a bouncing pin which operates a pair of contact points. The amount of current that passes through these contact points registers on an ammeter. This whole apparatus is called a knock meter.

In the Road Method the gasoline of unknown octane number is run in an engine and an operator listens for knock. This knock is then compared with the knock produced by a reference fuel of known octane number

run under similar conditions. This may sound like placing a great deal of confidence in the operator's ear but be assured by the writer that such is not the case.

In the preparation of this article the writer, who really knows very little about gasoline, visited a laboratory and observed the Road Method of rating gasoline for octane number. A reference fuel is run through the engine and then an unknown gasoline of somewhat higher octane number. This is followed by another reference fuel of slightly lower octane number. Then with a chart the operator can call the knock intensity of the various fuels what he will. Regardless of whether his nomenclature is trace, light, medium or heavy with plus or minus signs, he still rates the fuel relative to the two reference fuels and since the reference fuels are never more than four octane numbers apart it is pretty hard for an experienced operator to be very far off. This is further checked by giving the operator duplicate fuels at various times without his knowing that they are duplicates and see if he comes up with the same rating. He invariably does. It all sounds rather complicated but really it is not.

Getting down to the individual methods of knock rating, the A.S.T.M. Method is the only method approved by the American Society for Testing Materials and at one time it had the greatest acceptance.

While the A.S.T.M. was willing to lend the weight of its approval to one (TURN TO NEXT PAGE, PLEASE)

By

**HENRY JENNINGS**

Technical Editor, Commercial Car Journal

80

74

**GAME**

88

**The game's on the up and up but fleetmen should note the knock point not the octane number because gas rating methods vary**

76

70

**OCTANE (Continued from Page 23)**

method of testing, it qualified its approbation by saying:

"The field of knock testing is complex and the following statement of fact, while well known to the expert, is presented as a warning to others who might assume that the test may be used without limitations to evaluate motor fuels in service:

"It has been demonstrated through years of research that no single laboratory test can be used as an accurate measure of the knock characteristics of a motor fuel. The tendency of a fuel to knock varies in different engines and depends upon the weather conditions, the adjustment of the spark, carburetor, etc., and the design and condition of the engine. When used in a given engine, the complete knock characteristics of a given motor fuel can be determined only by running the fuel in that engine under varying driving conditions. The A.S.T.M. octane number is an evaluation of the knock characteristics of the fuel in the C.F.R. engine under arbitrarily prescribed test conditions. Deviations of rating of fuels on the road from ratings by the A.S.T.M. methods may be large. In general these deviations are less than plus or minus 3 octane numbers, although in exceptional cases they may amount to as much as 10 octane numbers."

Today this method is not necessarily the most widely accepted. Briefly, it consists of comparing the knocking tendency of unknown gasolines with that of reference fuels of known octane number as previously outlined. The comparisons are made in a standardized, single-cylinder engine made by the Waukesha Motor Co. The reference fuels used in this and all other methods of testing are made by the Standard Oil Co. of New Jersey. Before general use of these reference fuels samples are sent to all members of the C.F.R. (Cooperative Fuel Research) where the reference fuels are tested against primary standards before the reference fuels are released as such.

Still referring to the A.S.T.M. Method, the test engine has a variable compression ratio and the test is made with the engine running at 900 r.p.m. The intake mixture is heated to 300 deg. and a definite spark advance is varied with changes in the compression ratio. At the

time of its adoption—1932—refiners agreed that results so obtained correlated well with values obtained in cars on the road.

With changing engine design and methods of refining, some refiners came to feel that the A.S.T.M. Method gave unsatisfactory predictions as to road performance of all types of fuels in all kinds of vehicles. After considerable cooperative work by various oil refiners and automobile manufacturers the L-3 Method was devel-

oped. Subsequent experience with this method showed that with some fuels it gave good results and with other fuels less satisfactory results. Some refiners adopted it and others did not.

The only difference between the L-3 Method and the C.F.R. Method is that the intake mixture is heated to 260 deg. and the spark is set to a fixed but more retarded position. The engine and the reference fuel are identical.



Driver Peterson

## BROTHER...

By **JACK HANCOCK**

**T**HE heavy truck labored on the grade. The tires hissed in the thin layer of water that filmed the road. In the cab, the driver peered through the twitching windshield wiper at the gray sheet of rain and wished he were closer to home.

At the crest of the hill, the driver shifted to a lower gear in order to ease his load of roofing down the slippery pavement. The freighter of the highway whined and splashed through the soggy night.

"What's this!" the driver muttered to himself. He quickly twisted his spotlight to the bottom of the hill. The piercing beam pointed like a finger to the side of the road. It picked out in crisp detail the huddled figures, the water-filled ditch, the school bus crazily tipped toward the field.

"A carload of kids!" the driver exclaimed. He neared the scene. The

truck slowed down, stopped. "Nobody hurt," the driver observed with relief. "And they're not kids! They're men," he added, seeing the figures lean out of the windows of the bus and wave frantically.

Two of the men scrambled up from the ditch where they had been standing and stood in the glare of the spotlight, smiling and nodding pleasantly to each other.

The driver rolled down his window. "What's the trouble, brother?"

One of the men stepped forward and in a cultured voice, answered: "We were blinded by the rain and ran off the road. Your assistance will be appreciated, sir."

"O. K., brother," the driver replied. "I'll have you fixed as good as new in a jiffy." He groped for the tow chain in the tool chest beneath the seat cushion.

The chain was heavy and the rain stung his face. He hesitated at the swollen ditch. Then, shrugging his shoulders, he plunged into the water and waded to the bus.

"We're sorry to trouble you, sir," the man at his side remarked. "But we are extremely grateful for your help."

"Forget it, brother," the driver said.

The Research Method was the original one used for obtaining octane values. It fell by the wayside to a degree because the values obtained by this method did not check with results on the road attained with some gasolines. It is used at present by some refiners. In recent years it has been modified somewhat in detailed procedure but generally it is the same as the other two except that the engine is run at 600 r.p.m. and the air at carburetor is heated to 125 deg.

Since none of these methods gives correct indications of the anti-knock values of all types of gasoline in vehicles on the road some refiners do their testing in ordinary production vehicles which they purchase for that purpose. The vehicles are standard in every respect except, possibly, for a spark timing control mounted on the dash. The vehicles in test are accelerated with wide open throttle up a hill on the road or under load on a chassis dynamometer. The un-

known fuels are compared to reference fuels of known octane number in a speed range of say 10 to 70 m.p.h. The engine is kept at operating temperature for this method.

Quite obviously the Road Method can be made to duplicate any given set of conditions with any given engine but then, if the results varied between engines and conditions of load, speed and temperature, it would be impossible to give the gasoline an  
(TURN TO PAGE 60, PLEASE)

## ..CAN YOU SPARE A LINE?

He looped the unwieldy chain around the front axle of the bus, hauled the free end over his shoulder, and returned through the ditch, his soaked shoes sucking at the mud.

From the truck he called: "Now when I give the word, cramp your wheels toward the field. I'm gonna' tow you down the ditch to a spot where the bank isn't so steep. Then I'll pull over into the other lane and you'll slide out onto the road as smooth as silk. Get the idea, brother?"

The truck roared and edged forward. Like an inverted pendulum, the top of the bus described sweeping arcs in the air. But it ploughed ahead and finally climbed the embankment, lurching dangerously.

"Hold on, brother!" the driver shouted into the night. "I'll pull you till you get her popping!"

The drowned motor of the bus clutched at a spark and sputtered. Soon it was chattering merrily.

Stopping the truck, the driver unfastened the chain.

The man approached him and said: "What is your name, sir?"

The driver saw the man reach into his pocket.

"Skip it, brother!" The driver  
(TURN TO PAGE 58, PLEASE)



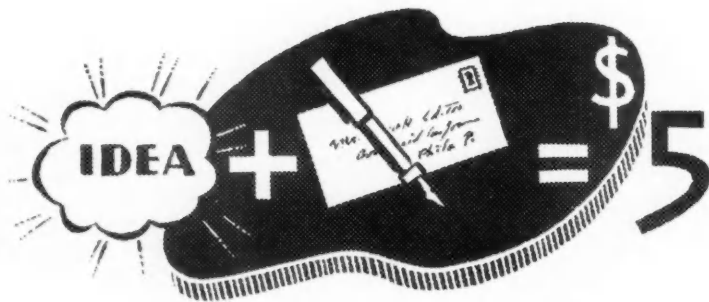
### The story of a good Samaritan who helped a brother in distress to reap praise and humor

Louis Peterson and the big Jahneke truck with which he pulled the Brothers out





# SHOP HINTS



## CAN YOU USE \$5?

That's what Commercial Car Journal pays for each shop hint accepted for publication on these pages. Simply send in the idea which you believe to be original. Don't worry about style. CCJ will prepare it for publication

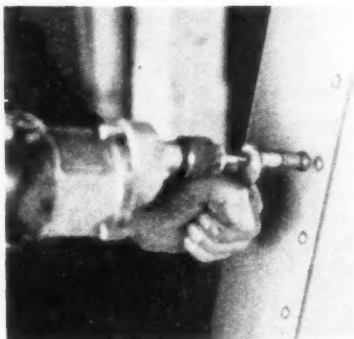


### 1. Drill Guide

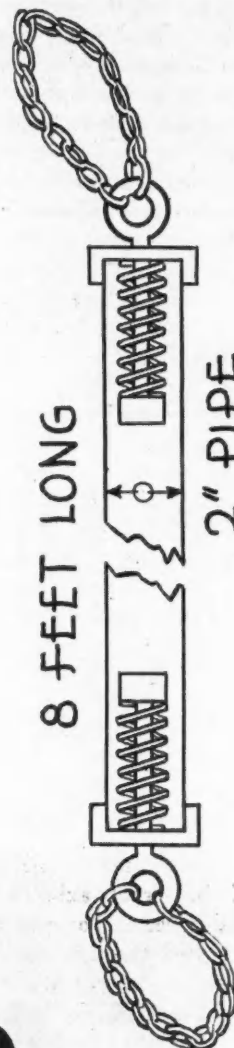
By Harry Wille

St. Joseph Ry., Light, Heat and Power Co.,  
St. Joseph, Mo.

The illustrations show a tool we have developed for center drilling of rivet heads. This is necessary to re-



move the rivets without damaging aluminum panels. The tool can be made for any rivet size. Counter-bore the guide to fit the rivet head. The body of the guide should be made short enough to allow the flute of the drill to extend beyond the guide so as to expel the cuttings.



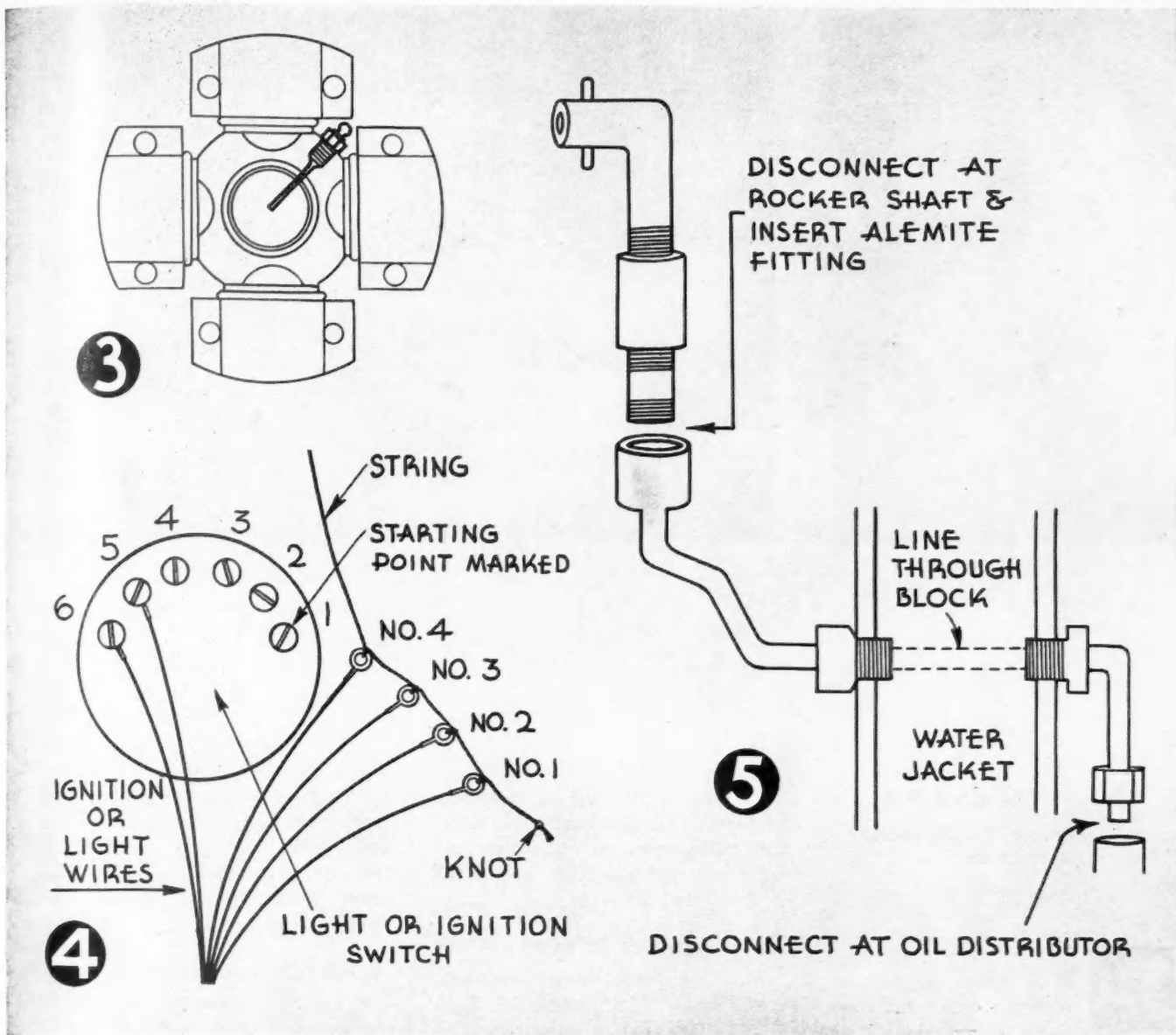
2

### 2. Tow Bar

By Carroll Haskins

Homestead Baking Co., San Francisco

I read in the March issue about the tow bar made by Al Stonke in his shop. I used to have one like that but I found that the chain used to break because we could not get it tight. So we made a new one by using an 8 ft. pipe and two pipe caps. We drilled a  $\frac{3}{4}$  in. hole in each cap and inserted an eye bolt with a spring and cotterpinned nut on it. These springs take all the play out of the bar and absorb the jar on starting. The chains then through the eye of the eye bolt never break.



### 3. Grease Fitting

By Hugh Tiftt

Watertown, South Dakota

We were having trouble with the grease fitting in universal joints throwing grease. To overcome this trouble we simply soldered a tube like a carburetor jet to the inner end of the grease fitting just long enough to reach the center of the joint. The tube carries the grease in far enough so that there is no centrifugal force to throw it out when the universal joint starts to revolve.

We use a tube  $1\frac{1}{4}$  in. long for International models D-2, D-5, D-15. Longer lengths fit larger models.

### 4. Wiring Procedure

By Lester Wood

Home Oil Co., Pomona, Cal.

When removing wires from a light or ignition switch it is usually difficult to replace them in the correct order. A wiring diagram does not help because the wires have frequently lost color due to age or grease. We take a piece of string and tie a knot in it for a starting point and then mark the starting point on the switch. Then as the wires are removed they are tied to the string in order and when it is time for replacement it is a simple matter to get them back in order.

### 5. Oil Line Cleaner

By Virgil G. Hesselgrave

Consumers Power Co., Jackson, Mich.

In our service we have had some trouble clearing the oil line that feeds the rocker arms on Chevrolet engines. Now we disconnect the oil line at the oil distributor that leads through the block making sure that the oil distributor opening is protected. Then we insert an Alemite fitting in the line where it connects to the rocker shaft. We fit an Alemite gun and clear the line with grease and then use compressed air to clear the line of grease. No matter how tightly it is plugged we can open it this way.



## A CRITICISM

*By*

**E. W. WINANS**

Chief Engineer, Federal Motor  
Truck Co.



FOR many years past, various state and advisory commissions have been wrestling with the problem of the rating of motor trucks. This problem covers both the carrying capacity and the hill climbing ability.

The public realizes, of course, that trucks perform an important economic function, but it is felt that abuses have crept in, which should be eradicated. Trucks, without trailers, generally move at a satisfactory speed, so that, in the eyes of the public, undoubtedly the worst offender is the underpowered truck-tractor pulling a large, heavily loaded trailer at a creeping pace over the hills. Therefore, a satisfactory rating must specify the proper load to engine ratio.

What does the public want?

It wants less road obstruction.

What does this mean?

It means one of two things; that trucks shall move faster on the hills or, preferably, that they shall travel

from city to city in a shorter space of time. That is to say, the overall time will be reduced without particular reference to any one spot or hill in the route.

### METHODS OF RATING

Many methods have been suggested and some of them tried. Each method has its proponents. Each method has its advantages and disadvantages. What are some of these methods?

#### 1. Operators' Rating

When buying a truck, each operator, whether consciously or not, applies his own individual rating. One type has a small amount of money; spends little, if any, time in figuring costs; and, especially if operating in level territory, may buy the lightest, cheapest tractor to pull whatever load is to be hauled. However, if he operates in hilly territory, he may find that it is physically impossible for him to operate satisfactorily with underpowered equipment.

The other type may control a great number of vehicles and is more careful to keep costs of operation. He finds it more economical, where advisable, to use stronger and more powerful equipment, because his time

on the road is shortened and, most frequently, his gasoline consumption and upkeep costs are reduced. A truck is a tool and he knows that heavy work can not profitably be done with light tools.

#### 2. Hill Climbing at a Specified Speed

It has been suggested that a truck shall climb a 4 per cent grade at 20 miles per hour. This is merely an example of rating by actual performance on a specified grade. The disadvantage of this method is that, while it would improve operation on one particular grade, it would lengthen the overall time required to travel from city to city.

#### 3. Army Specifications

These specifications generally require that a truck must be able to climb a certain grade in direct gear. It is usually specified as a 3 per cent grade, although some specifications have varied from this figure. The Army bases the hill climbing ability on the torque of the engine, as shown in the following formula:

Grade Ability equals (Torque times Axle Ratio times Efficiency) divided by (Tire Radius times Gross Weight) minus (.015 times 100).

(TURN TO PAGE 52, PLEASE)

### VARIOUS TYPES OF ENGINES DEVELOPING 80 to 90 HORSE POWER

	Horse Power	Torque	Displace- ment	Engine Weight	R.P.M.	Truck Weight
<b>RACING Engine</b>	91	87	91		7-8000	
<b>PASSENGER CAR Engines</b>	92 84 87 85	138 154 167 155	176 200 218 222	450 to 550	3200 to 4000	
<b>TRUCK Engines</b>	78 80 90 83 90	158 180 200 188 250	227 227 269 272 359			3500 4200 5200 5300 7300
<b>DIESEL Engines</b>	86 83 85 90	308 208 212 305	285 297 295 467	800 to 2100	1800 to 2400	8900 6300 6000 8000





## A DEFENSE

*By*

**B. B. BACHMAN**

Vice-president, Charge of Engineering  
The Autocar Co.



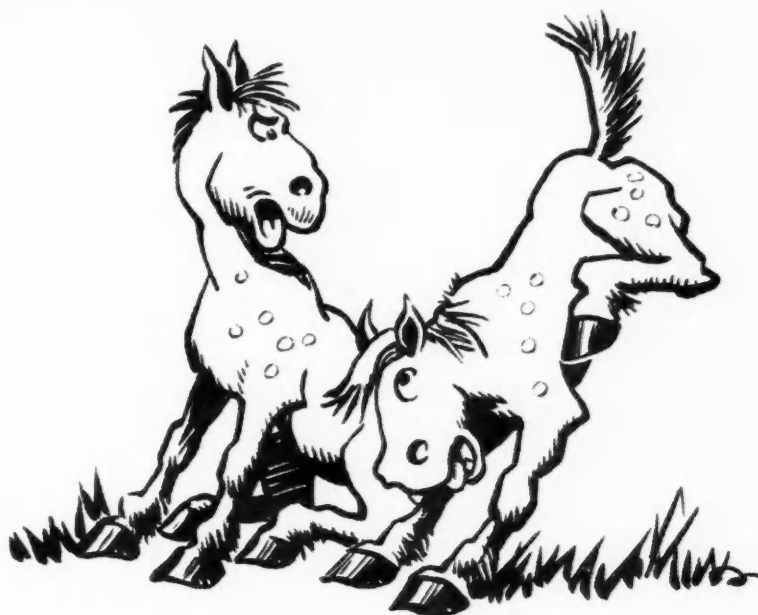
THE discussion contributed by Mr. Winans is, in general, valuable. The problem of rating has received much consideration and for various purposes different methods of analysis have been used as Mr. Winans points out.

The first method called "Operators' Rating" based upon experience and upon cost records is undoubtedly the best. Unfortunately it is not possible to put this method into a general form because the conditions under which the equipment is used forms an important part of the basic data.

The second method, "Hill Climbing at a Specified Speed," is of very questionable value as a general specification. In the first place, due to the fact that transmissions are limited in the number of available ratios with intervals of varying magnitude between them, there is no continuity in the relation between speed and grade ability. Therefore, it can be

(TURN TO PAGE 56, PLEASE)

# A DISCUSSION OF TRUCK RATINGS



**With a criticism of the S. A. E. Horsepower Rating for truck ability by one prominent truck engineer and a defense by another**



**A Georgia fleetman warns of fleet economies that impair company efficiency but itemizes many economies that can be done with profit**

# EFFICIENCY COMES FIRST



**TODAY** the automobile fleet is taking its place in size among the major items of operation in a public utility. For instance, in our company, the automotive expense is 80 per cent as large as the electric transmission expense and 20 per cent as large as the company electric distribution expense! Our car and truck fleet is a \$400,000 annual business in itself, and its product, mileage, is turned out at a rate equivalent to traveling around the world almost three times each month. Surprising as it may sound, for every nine horsepower our company has in electric generating plants, it has one horsepower in the motors of its cars and trucks!

There are four important trends that are making it necessary to increase the number of vehicles for a utility's ordinary operation:

1. The increase in rural and suburban customers.
2. The demand of customers in this

high speed age for almost instantaneous service.

3. The reduction in the number of hours available for work due to the wage and hour law restrictions.

4. And, most important of all, the rapid increase of labor costs, making it imperative to use man power in the most efficient manner possible.

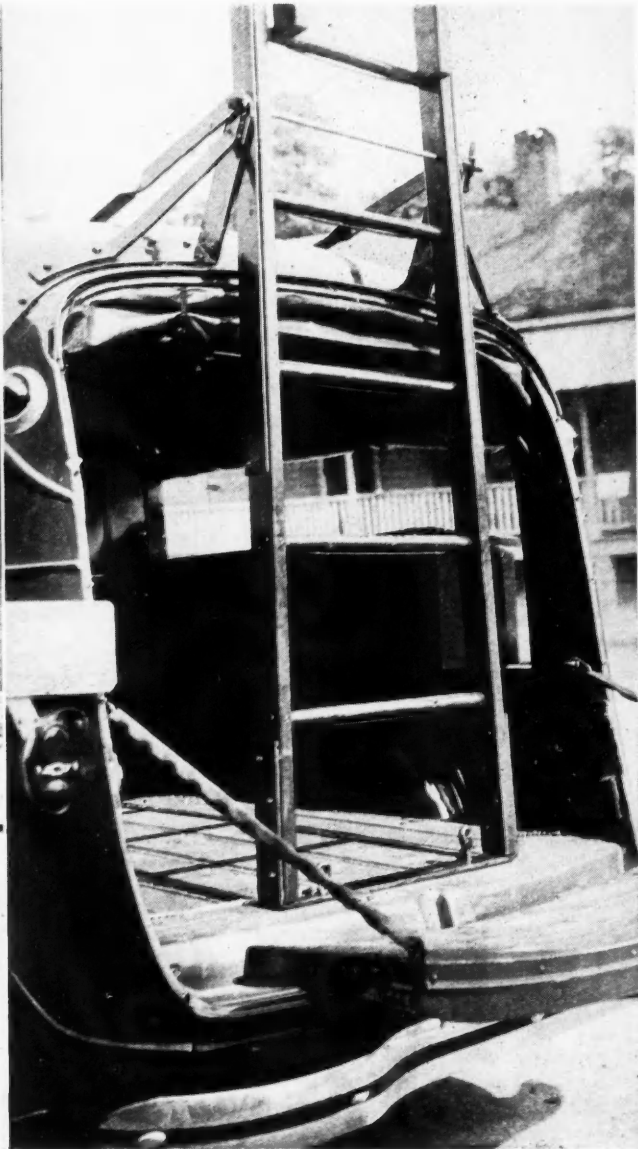
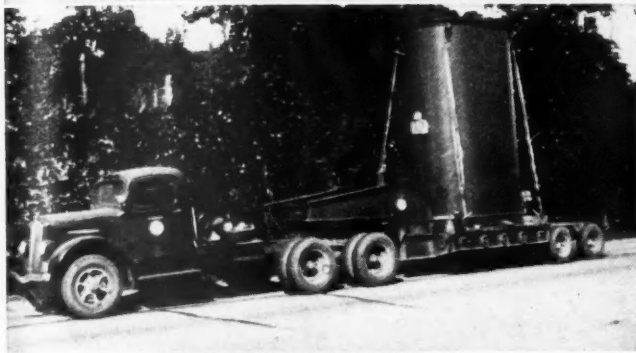
The first motor vehicles used by electric utilities were the trucks for line crews. But today, only one vehicle out of eight in our fleet is used for this fundamental purpose. Most of the new uses of vehicles have come from outside of the strict field of transmitting and distributing electricity. The majority of our vehicles are used for various and sundry incidental purposes, such as for home economists, power sales, lighting sales, merchandise sales and delivery, appliance repair service, meter reading, collecting, and in connection with various "side line" businesses such as street railway, ice and gas.

As car and truck operating costs are lowered, it will be found economical to use vehicles in activities where they could not be justified before. Smaller costs, bigger fleets!

The automotive department is not a money maker. It does not even pay its own way. The money the fleet supervisor spends so begrudgingly is in the final analysis the expense of other departments.

If we fleet men could always bear this fact in mind, we would approach many problems from a different point of view. We could better appreciate the way the operating man may look at a problem involving transportation equipment. Looking at it from this angle, we would first consider the total cost to the company for doing a given job that involves the use of automotive equipment, and then consider that part of the cost which clears through the automotive accounts.

Fleet men sometimes have the repu-



These are typical examples of Georgia Power Co.'s fleet efficiency. Top to bottom, a low-cost line truck on specially-equipped 1 1/2-ton chassis, a 10-tired tractor, 16-tired trailer combination that takes 40-ton loads in stride, and a special service body for operations requiring large compartment space. Right: Details of an inexpensive ladder arrangement mounted on standard truck body



By

## RANDOLPH WHITFIELD

Supervisor of Automotive Equipment,  
Georgia Power Company

Who concentrates on fleet problems of public utilities but many of whose ideas will be found interesting and valuable by fleetmen in other fields

tation of seeing nothing but the cost per mile figure, and some utility executives can see no further than the total transportation cost figure. Neither one of these figures, of course, is the true measure of transportation efficiency. In fact, there is no way to put it down in black and white.

The "Jerkwater Power Co." may pride itself on having a very low ratio of cars per customer and a correspondingly low transportation cost. The "Shock-Proof Power Co." on the other hand, may have a larger proportion of automobiles and a higher

transportation cost and be criticized by the "budget jugglers" for its apparent wastefulness. However, the second company actually may have the lowest overall electric operating cost because its man power is utilized more efficiently through having ample transportation facilities. It would actually have the most economical transportation setup although the fleet cost figures alone would indicate otherwise.

There is no economy, for example, in having a \$180 a month engineer waste a third of his time, or \$60 a (TURN TO PAGE 36, PLEASE)





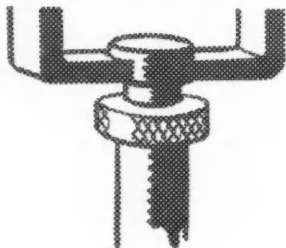

# FLEETMEN'S FORUM



## FEATURES



**truck capacity ratings, more economical cars, maintenance of scattered fleets and inaccessibility at Transportation Meeting**



AT the opening session of the two-day Transportation and Maintenance Meeting of the SAE at the Mellon Institute Auditorium in Pittsburgh late in March some fleet operators proved that they still hope for a uniform and foolproof method of rating truck capacity by the way they sailed the problem into the blockade of shrewd analysis where it was torpedoed. The second part of the session was a seance in which the ghost of the barebones passenger car, that perennial spirit of transportation which would cost very little, last a long time, be easy to maintain and give 25 miles per gallon, stalked only briefly before it was laid away in its grave from which it will doubtless arise to haunt some fleet operators again. With this troublesome spirit quieted the question of maintenance control for scattered fleets opened on a wide front but quickly narrowed down to a discussion of whether or not dealers could successfully handle fleet maintenance. There was time for a few pertinent pokes at manufacturers for hiding the parts that need periodic attention before some 250 operators demanded a recess to put on the feed bag.



Jean Ray, Virginia Electric and Power Co., paced the meeting as chairman. He was supported by seven appointed discussion leaders. The questions discussed were determined by John Orr, Equitable Auto Co., Pittsburgh, Pa., who had done a competent questionnaire job in advance of the meeting. As soon as the first question was launched, the meeting became entirely informal with discussion coming from all over the hall.

The first question brought up by Chairman Ray was the one of uniform capacity rating of trucks. He called upon Fred L. Faulkner, Armour & Co., Chicago, to lead off. Mr. Faulkner said that operators did need some kind of a measuring stick and he supposed it would have to be based on a rating of principal component units. Mr. Faulkner cited as difficulties in obtaining a uniform rating the fact that any rating would depend upon such variables as number of stops, the type of territory that the truck would travel, the speed at which it would operate, as well as the amount of weight that the truck would carry.

At this point F. K. Glynn, American Telephone & Telegraph Co., and Chairman of the Motor Truck Rating

**Opposite page, Merrill Horine has his say while John Orr, Jack North, Kay Glynn, Fred Faulkner, Cap Axelsson and Henry Jennings await their chance at the forum. Above left: Jean Ray, chairman of that informal session. Next, P. H. McCance giving his all for employee training at the T and M dinner. Next, R. J. Piggott orally gives more miles per gallon and economy hints**

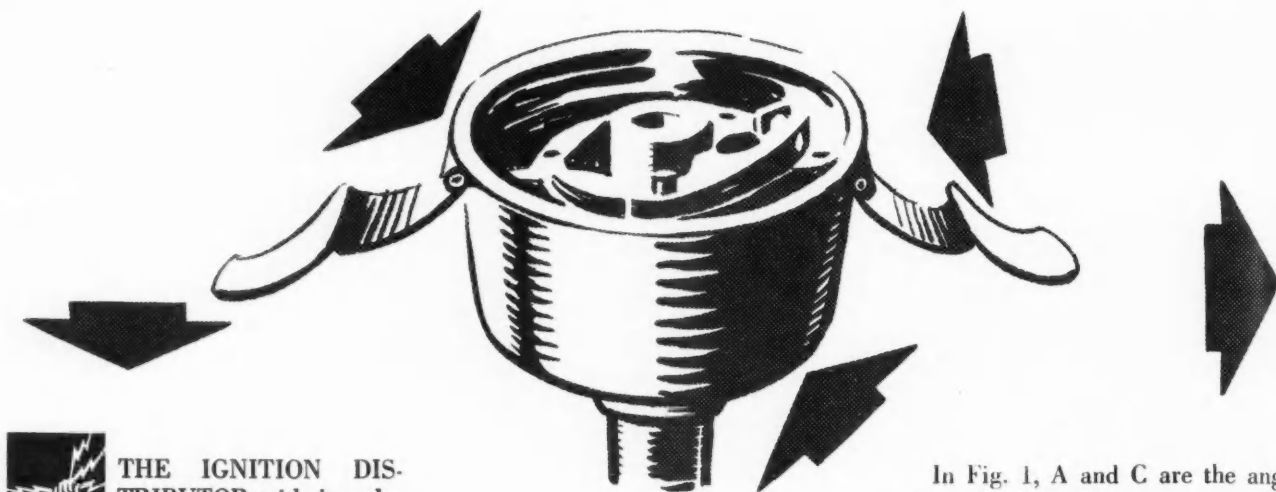
Committee of the SAE, asked all operators present to present their views freely and make it known what kind of rating they needed for the benefit of the committee. Such information, Mr. Glynn indicated, would speed the committee's work and eliminate the possibility of the committee's coming up with a rating that was foreign to operators' needs.

Fred B. Lautzenhiser, International Harvester Co., inquired if the rating which was the subject of discussion was for licensing, for the purchaser or the operator, since these were three different ratings. Chairman Ray answered him by saying that the

rating should indicate what could be done with the truck and Mr. Lautzenhiser replied that he thought that the license rating was the most important.

Merrill C. Horine, Mack Mfg. Corp., supported Mr. Lautzenhiser's contention by elaborating on the difficulties of getting a rating that would serve all purposes in all places. In rating for license alone, Mr. Horine pointed out that in Alabama a 2½-ton truck pays a license fee of \$50 and a 6-ton truck pays \$400. Mr. Horine read a long list of such examples that complicate license ratings. In Pennsylvania he pointed out that the chassis weight must be in proportion to the gross weight. Mr. Horine in comparing truck ratings to ratings of other devices stated that tire ratings were not as sacred as they have been believed to be, as witness the overloads in some services.

John M. Orr, Equitable Auto Co., came to the defense of conditions as they are. He thought the manufacturers were to be complimented on the wide choice of overlapping component units which made it possible for the fleet operator to study his operation and take his pick. Mr. Orr  
(TURN TO PAGE 65, PLEASE)



### THE IGNITION DISTRIBUTOR with its relatively delicate mechanism

stands between the battery—the source of current—and the sparks that fire the cylinder charges. No matter how good the battery, or how good the ignition coil and cables, or the spark plugs, the final sparks are pretty much determined by the breaker points. These little points not only have to break the primary or battery circuit for sparks at the plugs, but they must do this so the sparks occur at the right time for each cylinder. This time element is all-important with breaker point action.

Breaker points usually are set while they are open with feeler gages to a specified opening, but it is just as important to know the length of time the points remain closed. It is during this time that the ignition coil becomes energized or builds up its magnetic field for inducing a spark in the secondary when the points open and the coil discharges.

The ignition distributor must be mechanically and electrically correct if the engine is to give its best performance and develop its maximum power and have the desired flexibility at all speeds. A worn cam, bearing or a bent shaft can easily affect performance of the unit.

The distributor cam has several important functions. Its “dwell” or “cam angle” determines the length of time in which the coil becomes energized. The cam also is designed to open the breaker points at the speed required for proper action of the coil and condenser.

To adjust or set the breaker points something must be known about the operation of a distributor. Referring to Fig. 1, it will be seen at E, that the points are closed with the fiber

**Proper spacing must be accompanied by correct timing and dwell length for maximum efficiency**

*By*

**B. M. IKERT**

rubbing block off the cam. If the cam is turned in the direction of the arrow the rubbing block comes to a spot where the breaker points are about to open, F. Revolving the cam further the open position of the points is attained at G, with the rubbing block at the highest spot or lobe on the cam. Revolving the cam still farther, H, Fig. 1, a spot is again reached where the breaker points are closed, and the cycle is repeated again.

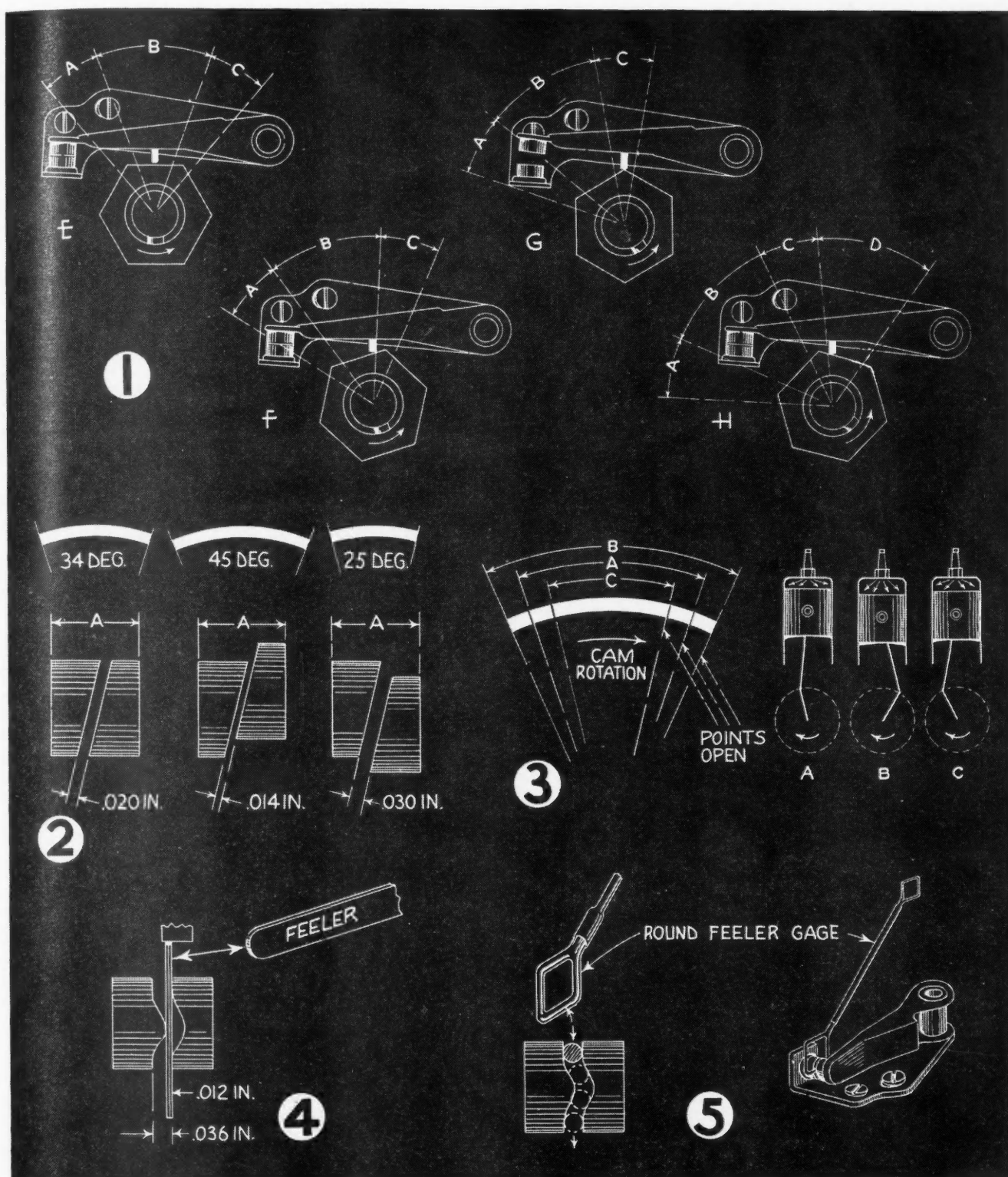
In Fig. 1, A and C are the angles through which the cams rotate and the breaker points are open. The “dwell” or “cam angle” is the length of time in degrees of cam travel that the points are closed. It is represented by B and D, in Fig. 1.

It is evident from Fig. 1, that wear on the fiber rubbing block attached to the breaker arm will materially effect the opening and closing of the breaker points. Thus, if the rubbing block becomes shorter, due to wear, naturally the breaker points are not opened as quickly and the dwell or cam angle becomes longer. That is, the distance B, Fig. 1, becomes greater. And, by the same reasoning, distance C, which represents the length of time the points are open, becomes less. Anything but the correct cam angle or point opening changes ignition considerably. Too much cam angle, or distance B, Fig. 1, is as bad as having too little.

First of all, the correct point opening is necessary to give the coil and condenser enough time to completely discharge. This they cannot do if the point opening, because of rubbing block or distributor shaft wear, has gone from, say, 0.022 in., to 0.014 in. It must be understood that the breaker points are not open until  
(TURN TO PAGE 36, PLEASE)

# POINTERS





# ON SETTING POINTS

**POINTERS (Continued from page 34)**

the spark or flame "drag-out" across the points is "out." It may take several thousandths of an inch point opening or several degrees of cam travel for this flame to go out and if the point opening already has been reduced by wear or otherwise, there is danger that the breaker points actually may become welded. With proper point opening, or correct cam angle, the coil and condenser action is normal.

But there is another thing to be said about proper point opening. If the cam angle is too long, that is, the points are closed for too long a period, ignition is delayed. That accounts for the fact that a new car needs adjustment after a few thousand miles. The rubbing block has worn and ignition is delayed. Why this is so will be understood from Fig. 2. With the correct cam angle, A, (assuming that the ignition timing is correct) the spark will take place at the right moment when the piston is just ahead of top dead center. If the cam angle is too great, B, the points open too late and the piston already has gone down on the power stroke. The engine is not as lively, of course. Should the point opening be too great, or the cam angle too small, C, Fig. 2, the spark takes place too early and besides there is not enough time for the coil to become energized. The coil builds up during the time the points are closed and so, again, the proper cam angle is very important.

The way in which the breaker points come together has much to do with smooth engine performance and general behavior of the ignition system. Refer to Fig. 3, assume that the point surface is substantially flat and that this surface is at a slight angle to the axis of the points, as shown at the left in Fig. 3. The points may open a distance, A, which might be 0.020 in., or a cam angle of 34 deg. Now, suppose the breaker arm is bent or worn at its bearing so it is raised slightly in operation, as shown in the center illustration, Fig. 3. Note that the opening has been reduced to 0.014 in. and the cam angle increased to 45 deg. Again, if the arm should drop, as shown in the right-hand illustration, the point opening may go to 0.030 in. and the cam angle reduced to 25 deg.

Unfortunately breaker points

usually build up a hump on one point and crater on the other. This aggravates the conditions in Fig. 3.

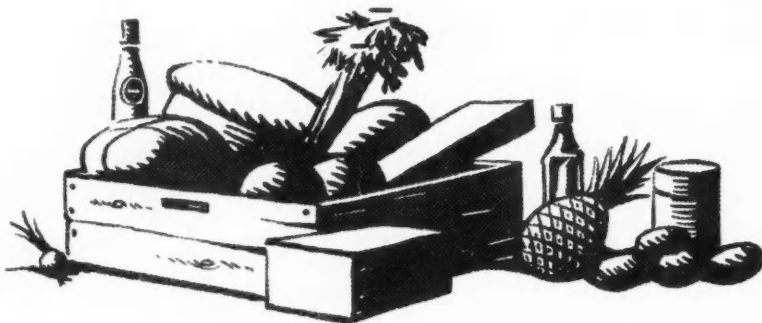
A word about setting breaker points. If the shop has one of the several types of distributor test fixtures in which the complete unit is mounted and operated for conditions of wear, governor action, vacuum retard, cam angle, etc., much time is saved and the unit can be reconditioned for standard operating requirements very quickly.

In the absence of such a test unit,

the mechanic must use feelers for the breaker point opening. Flat feelers are not desirable for this because of the possible chance for error. We have seen that proper point opening plays a big part in obtaining correct cam angle. Assuming that the distributor shaft is not worn, that the cam is in good order, new breaker points, proper spring tension on the points, etc., it is reasonable to believe that the cam angle will be sufficiently correct if the mechanic carefully adjusts the opening with a feeler gage.

PREPARED & COPYRIGHT 1940 BY E. M. WESTBERG,

## THE BODY OF THE MONTH



This is the eighteenth in Commercial Car Journal's series of original body designs. All designs are copyrighted but arrangements can be made for procuring complete construction drawings and specifications. Address the Editor.

The need of an outstanding and attractive design in the door to door retail merchandising field is the basis for the creation of this month's design. The design is of a unit for use in the bakery and food products fields where a variety is carried.

Designed along straight lines to facilitate production and reduce the cost of building, this body relies on molding treatment to give it its clean distinctive appearance. Its outstand-

ing feature is the display window in the upper side panel. The presence of this window is emphasized to attract attention by the use of chrome plated molding around it. The function of the window is to display physically daily or weekly specials as the case may be.

The dimensions given here are suggested as being ideally suited for this type of work but are not fixed and can be varied to suit specific

Note in Fig. 4, that a flat feeler can give the wrong indication as to point opening. The actual opening may be considerably greater than that indicated by the feeler. This is because of the hump or buildup on one of the points. It is better to use feelers made of round stock, as shown in Fig. 5. Such feelers are convenient to use and a dental mirror used along with them to ascertain the condition of the points is a handy item.

Always make sure that the breaker arm is free on its hinge pin and that

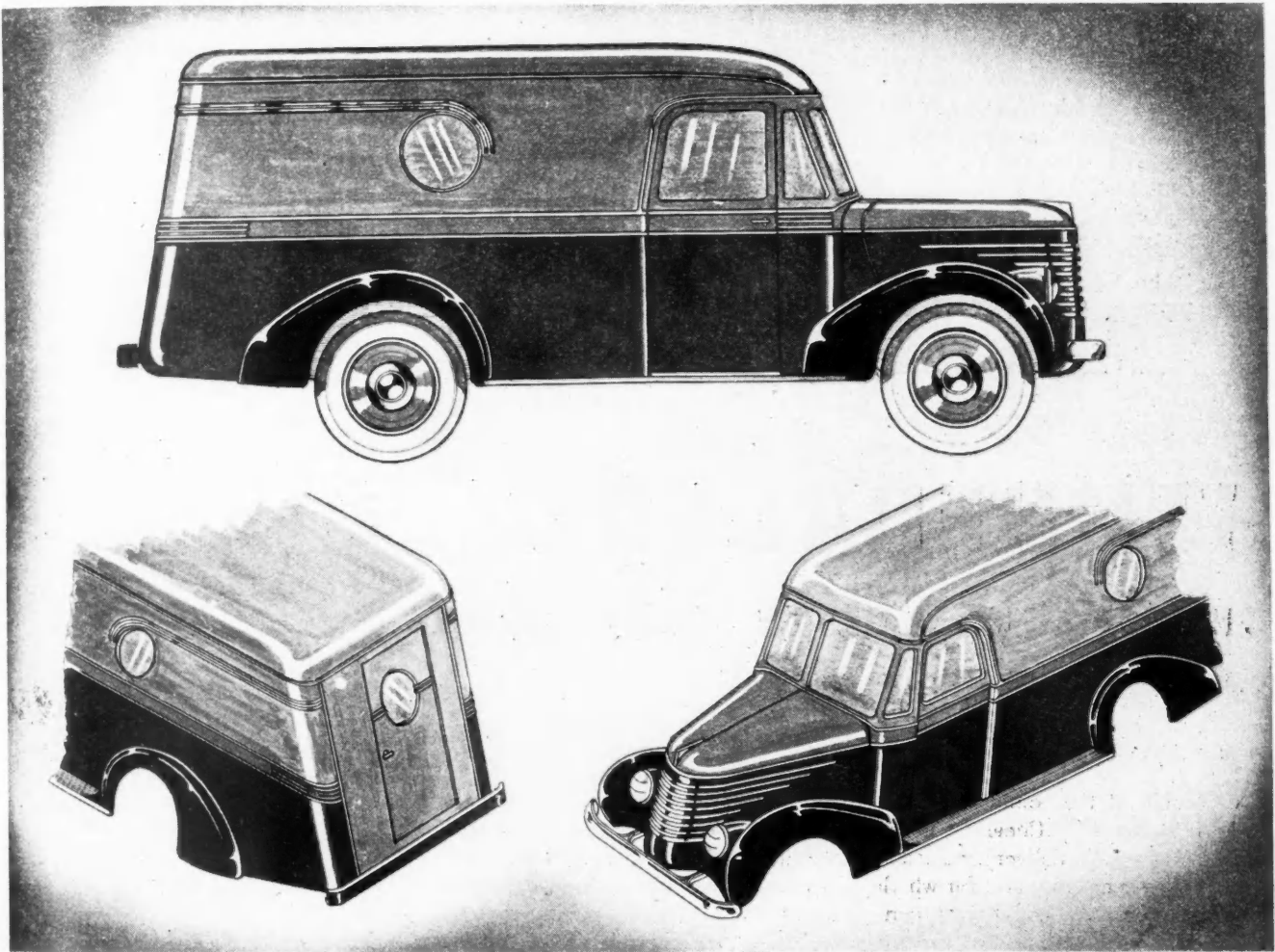
the contact points line up properly. Always bend the stationary contact—never the breaker arm between the rubbing block and point. The rubbing block can be lined up squarely with the cam by inserting a piece of white paper and carbon paper between the rubbing block and cam. By turning the cam an impression is made on the white paper showing which way the arm must be bent between the hinge pin and rubbing block. It is not necessary to get an impression of the full face of the rub-

bing block—only one edge is enough.

This will be more readily understood by reference to Fig. 1, which shows at F, for example, that only one edge of the block is in contact with the cam surface.

Always check the primary connections in the ignition system. Loose joints, broken or frayed wires, etc., cause high resistance or voltage drop and may seriously impair work of the breaker points and other units upon which depends the ultimate spark in the cylinders.

## BODY DESIGNER . . . DESIGN NO. 18 . . . RETAIL FOOD FIELD BODY



conditions or requirements. The body in the clear is 108 in. long by 64 in. wide by 60 in. high. This gives a loading capacity of approximately 230 to 240 cu. ft.

Sliding entrance doors are shown and are recommended to make it easier for driver or helper.

Perishable load protection is considered and provided for from both the angles of heat and dust. The roof is insulated to help maintain as near constant temperature as possible. A dust-proof partition between driver and load is provided in addition to the entire body being lined and care-

fully molded to prevent dust from entering the body and spoiling the load. In addition this lining feature also helps keep out objectionable gasoline and oil fumes.

Straight simple lines of this design make it easily adaptable to wood and metal or all-metal types.



# CHEVROLET

## DUBL - DUTY PACKAGE DELIVERY

**T**HE Studebaker Corp. has introduced a new Champion Sedan Delivery. Body of the new unit has a generous amount of loading space instantly accessible through 43-in. side doors or through the high-lifting rear deck hatch which allows loading without stooping.

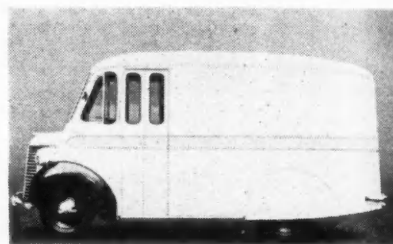
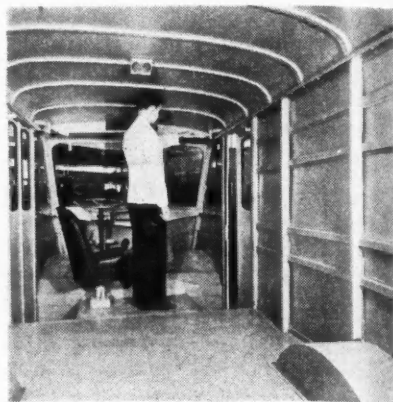
Interior is fully finished, sides being covered in durable, attractive gray leather fabric, metal-backed. The adjustable driver's seat is upholstered in high quality gray leather. Body is all steel throughout and safety glass is used all around.

The 78-hp. Studebaker six-cylinder Champion engine powers the new

Sedan Delivery. It has "heat-dam" pistons, forged steel crankshaft, fully counterbalanced with integral counterweights for smoothness, forged steel camshaft with four bearings running in steel-backed babbitt-lined bushings and a full-pressure oiling system.

Other features include Studebaker's planar independent suspension, hydraulic brakes, steering wheel gear shift lever, sealed beam headlamps, and hood lock which operates from inside the cab.

Overall dimensions are—length from bumper to bumper 188¾ in.; width 70 in.; height 65 in.



Top: 300 cu. ft. of loading space provides plenty of room in Chevrolet's Dubl-Duty unit, yet wheelbase is 114 in.

Above: Engine is half in, half out of body, providing shorter overall length without sacrifice of accessibility

# STUDEBAKER

## CHAMPION SEDAN DELIVERY

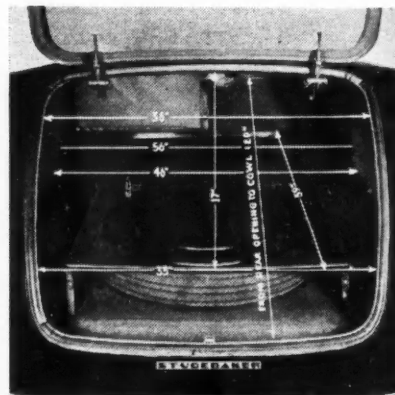
**N**EWEST of the commercial cars to be introduced by Chevrolet is the Dubl-Duty package delivery, a special house-to-house delivery unit for which increased economy and driver convenience are claimed.

A new, larger body on a specially adapted light-delivery chassis affords approximately 300 cu. ft. capacity. The extra space is made possible through the employment of a new-type "overall" body, which extends halfway over the conventional light-delivery hood and is built downward to curb height.

A loading space length of 114 in. on the short-wheelbase chassis per-

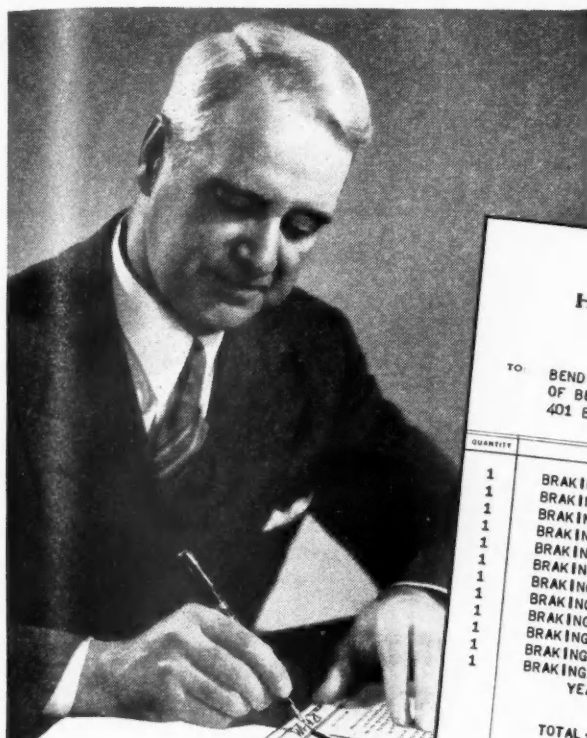
mits the carrying of a 9x12 rug (rolled) and the 6 ft. 8 in. height allows ample headroom for the average driver as well as full-length garment hanging in the dry cleaner field.

The driver's seat is of the "swivel chair" type, affording maximum comfort and easy accessibility to either door. Heavy roof and side panels are attached to steel bow and channels that form the body framework, and the side panels and vertical frame members are stiffened and braced with horizontal reinforcing channels. The floor and wheel housings are of heavy steel plate, supported by rigid sills and cross-members.



Top: Unobstructed loading space and easy accessibility from the rear are provided in Studebaker's Sedan Delivery

Above: Streamline passenger car styling and striking two-tone color combinations add to delivery sales appeal



## WHEN YOU ORDER POWER BRAKING

PURCHASE ORDER  
from  
**HEAVY DUTY MOTOR SUPPLY COMPANY, INC.**  
Truxville, Transylvania

TO: BENDIX PRODUCTS DIVISION  
OF BENDIX AVIATION CORPORATION  
401 BENDIX DRIVE, SOUTH BEND, IND.

ORDER No. 45798

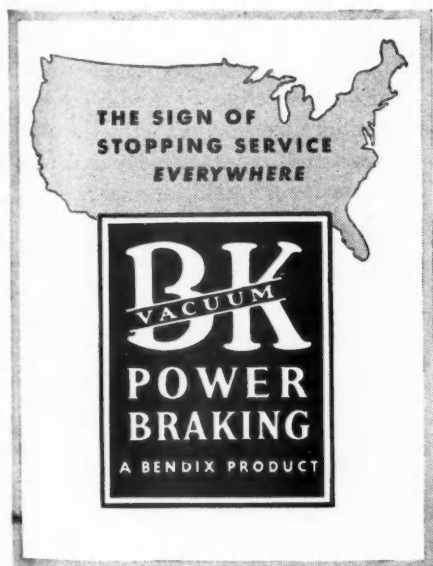
QUANTITY	DESCRIPTION	PRICE
1	BRAKING THAT MEETS ALL STATE LAWS FOR TRUCKS AND TRAILERS	SLIGHT COST
1	BRAKING THAT ADDS LEAST WEIGHT	NO CHARGE
1	BRAKING THAT ADDS FEWEST PARTS	NO CHARGE
1	BRAKING REQUIRING PRACTICALLY NO MAINTENANCE WORK	SLIGHT COST
1	BRAKING OFFERING INSTANT REMOTE CONTROL	SLIGHT COST
1	BRAKING OFFERING ALL EMERGENCY FEATURES OF TRAIN OPERATION	SLIGHT COST
1	BRAKING EASILY AND QUICKLY INSTALLED	MINIMUM EXPENSE
1	BRAKING PROVIDING FULL CONTROL OF POWER APPLICATION	NO CHARGE
1	BRAKING BACKED BY NATION-WIDE, TRAINED, COMPETENT SERVICE	SLIGHT COST
1	BRAKING BACKED BY YEARS OF EXPERIENCE	MINIMUM CHARGE
1	BRAKING BACKED BY UNAPPROACHED PROTECTION OVER FUTURE YEARS OF SERVICE	NO CHARGE
TOTAL: 1 SET OF BENDIX B-K POWER BRAKING EQUIPMENT		* LOW FIRST COST - LOWEST ON ANY BASIS OF VALUE DELIVERED

SIGNED: *RBH*

*Specify*

# Bendix B-K

and you've bought all the stopping security  
that power braking can provide!



**T**AKE a moment's time out for a good look at this power braking picture, from your point of view! Whether you build trucks, sell them, service them, insure them or operate them, the only reason you have any interest in power braking is because it makes a truck safer—easier to sell—a better risk—a better investment with lower service overhead.

Since that's true, and since one type of power braking—Bendix B-K—is so outstanding in every respect—reputa-

tion, world-wide preferment, performance and price-per-value-delivered—it's certainly sensible to specify Bendix B-K Power Braking.

No other type of power braking gives you all of the things you rightfully desire when you buy power braking... but Bendix B-K does.

And—this is important—thousands of trained service organizations, from coast to coast, safeguard the reliability of your Bendix B-K system. This assures minimum servicing time.

**BENDIX PRODUCTS DIVISION**  
OF BENDIX AVIATION CORPORATION  
401 Bendix Drive • South Bend, Indiana  
In Canada: Bendix-Eclipse of Canada, Ltd., Windsor, Ontario

## BIRD-WHITE LIGHT-DUTY DUMPER AND TOWER LIFT

**N**OW, for the first time, a hydraulic dump hoist is available for installation on the  $\frac{1}{2}$ ,  $\frac{3}{4}$  or 1-ton truck chassis. The manufacturer is the Bird-White Corp., 624 S. Michigan Ave., Chicago, and the equipment is designed for the lighter jobs up to 2000 lb. payload.

High pressure hydraulics is responsible for the new performance of this hoist. Compactness of the mechanism makes possible low mounting, low loading height and light weight. Under 48 in. loading height makes it ideal for all hand-loading maintenance work. Design is so simplified that there are fewer wear-out parts, resulting in low maintenance cost.

Operating features include maximum dumping angle of 60 deg., cab-controlled, raising and lowering dump body while the truck is in motion, high-speed operation in raising and lowering the hoist and minimum sidesway and top heaviness.

Two high-pressure hydraulic rams

operate the hoist. These are mounted well forward of the hinge points in a vertical position, affording a direct lift to the load, thereby eliminating cramping and adding years of life to the chassis.

In addition to the dump hoist, Bird-White also is building light-weight hydraulic tower lift equipment that embodies many new features.

An important feature is that it can be adapted to the present truck of the operator and installed on trucks from 1-ton capacity up. Lifts can be had to meet all special requirements. In body design, Bird-White offers a paneled back truck, streamlined in every detail, completely hiding the lowered lift platform, or the open backed utility type tower truck.

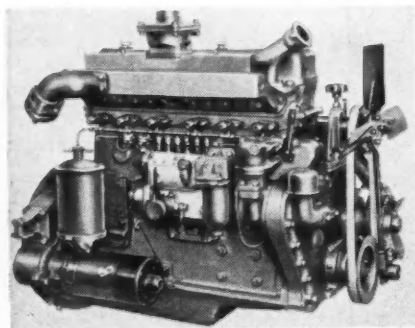
Other features are light weight, speed, low initial height with extreme elevations up to 30 ft., sturdy construction, simplicity of design, ease of operation, rigid stability and safety. Raising and lowering are



controlled entirely from the lift platform, which is operated by twin hydraulic telescopic rams. Patented platform flooring and collapsible guard rail contribute to safety.

(TURN TO PAGE 84, PLEASE)

## BUDA OFFERS 6-CYLINDER DIESEL FOR FORD TRUCKS



**T**HE Buda Co., Harvey, Ill., has announced a completely packaged 6-cylinder diesel engine unit for Ford trucks of both c.o.e. and conventional types. The engine used is the Buda-Lanova diesel model 6-DT-317 of 317 cu. in. displacement developing a maximum of 81 hp. at 2300 r.p.m.

The new packaged unit has been completely engineered for the Ford

truck so that its installation may be performed easily either at the factory or Buda field distributors.

A 1940 conventional Ford chassis equipped with the new diesel unit recently completed a 165-mile demonstration run, pulling a full load, with a fuel consumption of 15 gal. This is an average of 11 miles per gallon compared with 5 miles per gallon for a similar gasoline powered vehicle, according to Buda reports. Running time for the diesel was 4 hours and 45 minutes compared with 6 hours for the gasoline truck.

### New Truck Registrations by Makes by Months

	Auto-car	Brock-way	Chevrolet	Diamond T	Dodge	Federal	Ford	G.M.C.	Hudson	International	Mack	Plymouth	Reo	Sterling	Studebaker	White Indiana	Willys	Misc.	Total
January 1940	143	117	15,997	563	4,345	153	13,282	3,142	56	5,538	572	718	11	22	85	434	173	326	45,650
January 1939	143	127	13,615	378	4,002	85	10,188	2,384	47	4,709	482	507	168	25	169	348	88	250	37,715
February 1940	94	92	14,145	425	4,341	113	12,092	2,724	60	5,009	425	767	4	31	101	380	182	351	41,336
February 1939	134	98	12,007	308	3,821	79	9,224	2,218	44	4,284	398	510	159	29	143	275	97	274	34,102
Two Months, 1940	237	209	30,142	961	8,686	266	25,374	5,866	116	10,547	997	1,485	15	53	186	814	355	677	86,986
Two Months, 1939	277	225	25,622	686	7,823	164	19,412	4,602	91	8,993	880	1,017	327	54	312	623	185	524	71,817
% Change, Two Mths.	-14	-7	+18	+40	+11	+62	+31	+28	+28	+17	+13	+46	-95	-2	-40	+31	+92	+29	+21



**The lowest battery cost  
per mile that even Exides  
have ever delivered**



**E**XIDE BATTERIES are so widely used by fleet operators because experience has shown that they minimize battery cost per mile. Among the reasons they do so is their exceedingly long life which spreads the battery investment over an extended period.

This is truer today than ever before. The Exide line of heavy-duty truck batteries now delivers an average of 25% longer life. A remarkable new Exide development has so greatly extended the life of Exide plates that the dependability as well as the life of these batteries has been materially increased.

You pay no premium for these better Exides. They cost no more. But they save money in a fleet from the day they are installed, and they keep on cutting your battery cost per mile during all of their longer life.

The Exide line includes types XH-131, XH-152, XH-173, and XH-194. We also offer these batteries in wood and fiberglass separator construction for "cycling" service. See your Exide Wholesaler today, or write to us.

**THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia**  
*The World's Largest Manufacturers of Storage Batteries for Every Purpose*  
Exide Batteries of Canada, Limited, Toronto

**Exide**  
**HEAVY-DUTY  
TRUCK BATTERIES**

# SHOWCASE

## OF NEW PRODUCTS

### Refacing Tool by Thompson

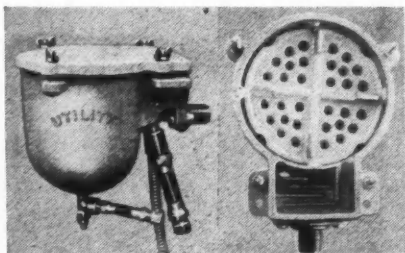
A recently designed tool for refacing the seats of water pumps before the installation of new seals is being offered by distributors of Thompson Products, Inc., Cleveland, Ohio. The tool includes five pilots of varying sizes which screw into a T-handle, two hardened cutters and two



emery finishing discs. The parts are fitted into a hardwood block, which can be hung on wall or bench by a hanger eye on the back of the block. A flat spring on top of the block holds all parts in place when not in use.

### New "Utility" Oil Filter

The Reclamo Mfg. Co., 2306 N. Western Ave., Chicago, manufacturer of the "Reclamo" oil filter and refiner, has just announced the high quality, low priced, freeze-proof "Utility" oil filter. In this device, the oil, after passing through the filter material, passes over a heated step before returning to the crankcase. Easily attached to the exhaust manifold, it is sufficiently heated to assure good performance in the coldest weather.



Under normal weather conditions the "Utility" will even evaporate some of the

water and gasoline dilution which accumulates in the crankcase. With the use of this filter, oil changes are said to be required only at intervals of 3000 miles. Cast in high quality aluminum, it contains 7 oz. of filtering material in a column 4½ in. by 4¾ in. and carries a year's guarantee against defective materials or workmanship.

### New Anti-Roll Device

A device known as the "BrakHold," designed to hold a vehicle on either up-grades or downgrades with foot pressure, is available from the Monarch Governor Co., Detroit, Mich. The main feature is a patented valve which traps the brake fluid in the drums and holds them on until released. A special auxiliary valve makes this release possible. The unit is operated by a lever mounted beneath the steering wheel, which requires merely a flick of the finger. Installation is simple, since the device is attached to the steering column by specially designed clamps. List price is \$7.95.

### Streamlined Marker Light

A new streamlined marker or clearance light that may be used to fit varying body curvatures from a flat surface to a curve with 24 in. radius is available from Arrow Safety Device Co., Medford, N. J. An interesting feature is the flexibility de-



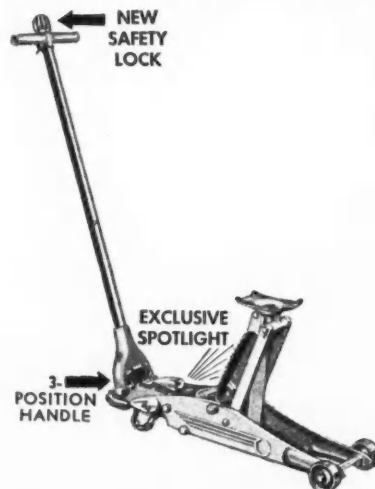
signed into the base and housing that lends itself most readily to a form-fitting installation. Available in chromium, black, or aluminum satin finish. A molded rubber gasket is furnished to make the installation complete.

### Delco Diesel Batteries

Two new diesel-type Delco batteries and seven heavy-duty bus and truck types, as well as a complete line of commercial types, are now offered by United Motors Service and Delco Battery distributors and dealers. Special features of the diesel models include heavy copper cores in all cell connectors, large copper inserts in terminal posts, genuine hard rubber cases and dual insulation.

### New Lightweight 2-Ton Jack

Featuring a three-position handle adjustment and a positive safety lock on the release valve, a new 2-ton service jack known as Model S-18 has been put on the market by the Blackhawk Mfg. Co., Milwaukee, Wis. The S-18, which lifts from



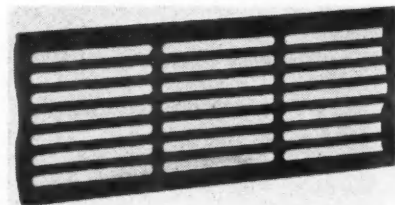
a low of 3¾ in. to a height of 20 in., is furnished with a built-in spotlight, one piece power unit, auto piston plunger action and finger tip control. Weighing only 125 lb., the new addition to the Blackhawk line sells for \$39.50.

### D and G Coil Type Cooler

A new and improved coil type refrigeration unit for trucks and trailers is being offered by Dromgold and Glenn, 332 South Michigan Ave., Chicago, Ill. The unit has a greater cooling capacity than previous models, having ½ in. fins instead of ⅜ in. fins on longer radiator tubes. The pump, which is built of bronze, is not affected by brine solutions and has a capacity of more than 10 gallons per minute. Roller bearings have replaced the usual bronze bushings at all moving parts. The unit is powered with a 1 hp. gasoline engine, and is equipped with a float-type carburetor and an overhead gas tank.

### Non-slip Step Plate Metal

Hy-Tenso "X," a non-slip abrasive metal for steps and plates on truck running boards, oil truck decks, tailboards, etc., is offered by the Eastern Malleable Iron Co., Wilmington, Del.



The new metal is claimed to have the strength and lightweight qualities of steel, combined with the high non-corrosive properties of gray iron—at the same time eliminating the low shock-resisting qualities of gray iron.

(TURN TO PAGE 44, PLEASE)

# BIGGEST VALUE IN ITS CLASS

## 3½-5 Ton Capacity, 381 cu. in. Engine



### NEW MODEL 35

Rating 3½-5 Ton  
4½" x 4½" 6-cyl. Engine  
13" Clutch—10" Frame  
Timken Axles

**\$2395**

F. O. B.  
Factory

Cab, Body and Special  
Equipment and All  
Taxes Extra

**C**HECK THE specifications of the new Model 35 Federal 3½ to 5-ton truck with all other leading makes in its class. Then check the price in the same manner. And you will see why the Federal 35 is literally and by all standards the *biggest value* in its class. Only one competing truck with a gross weight rating equivalent to the Model 35 has an engine of greater displacement—and it costs \$3,600.00—\$1,205.00 *more* than the Federal 35.

This new Federal model will be welcome news to owners who have learned from experience that it does not pay to overload and overwork engines and chassis too light for their jobs. For here is a truck designed and built to save dollars for heavy-duty operators—in *first cost* as well as in operating cost. With its heavier chassis and larger engine run at slower speed it will make faster time and reduce upkeep and operating expense through a much longer life. If you have

found lighter equipment inadequate and costly to operate and maintain, and have hesitated to invest more than \$2,400.00 in a heavier chassis, here is the answer.

Federal now has one of the most complete lines on the market, including models from ¾ to 8 tons. And Federal dealers are prepared to supply equipment exactly suited to *your* individual requirements.

### HERE IS THE PROOF

Make	Gross Weight	Engine Dis.	Price
FEDERAL Model 35	22,500	381 cu. in.	\$2,395.00
Truck A	22,000	361 " "	2,710.00
" B	22,500	361 " "	2,795.00
" C	23,400	354 " "	2,995.00
" D	22,000	358 " "	3,325.00
" E	24,000	362 " "	3,600.00
" F	22,500	404 " "	3,600.00

# FEDERAL TRUCKS

FEDERAL MOTOR TRUCK COMPANY • DETROIT, MICHIGAN  
Leaders in Commercial Transportation for 30 Years



## NEW PRODUCTS

(CONTINUED FROM PAGE 42)

### Weaver Headlight Tester

A new headlight tester which measures beam candlepower and indicates the exact number of inches the beam is off proper aim at 25 ft. is the newest product of the Weaver Mfg. Co., Springfield, Ill. Known as the "Rayoscope," the instrument eliminates hit-or-miss adjustments by giving exact information on meter dials and an aiming scale, as to the amount of

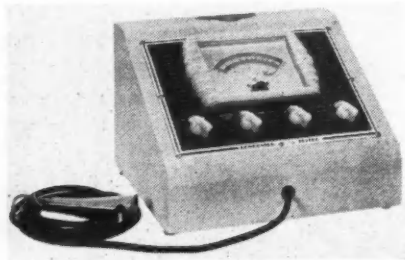


correction necessary.

Four balanced photoelectric cells are placed in the path of the beam, concentrated by a reflector placed at the rear of the unit, and they automatically select the geometric beam center and indicate aim by the use of two meters, one for vertical and one for lateral aim. Use of the cells for scanning the beam avoids guessing at the center or top of the beam by simply looking at a more or less accurate concentration of the beam pattern.

### Nagle Condenser Tester

A condenser tester which determines the condition of an ignition condenser on a direct reading meter scale is now being offered by Nagle Equipment Corp., General Motors Building, Detroit. Equipped with a line voltage compensator and a General Electric meter with direct reading good-bad scale, the unit will test the condenser on or off the vehicle and will give readings for condenser capacity, faulty internal connections, condenser leakage and



high voltage breakdown. It operates from 105-125 volt A.C., 60 cycle supply, with other cycles obtainable.

### Modern Snap-on Work Bench

A combination portable work bench and tool chest known as the "Rolla-Bench" is now available from the Snap-on Tool Corp., Kenosha, Wis. The rubber-covered bench top is strong enough to mount a vise and is equipped with an adjustable bench light and an electric outlet for quick connection of power tools. A disappearing roll-front pulls down and covers the front of the bench when not in use, securely locking the entire contents of the unit.

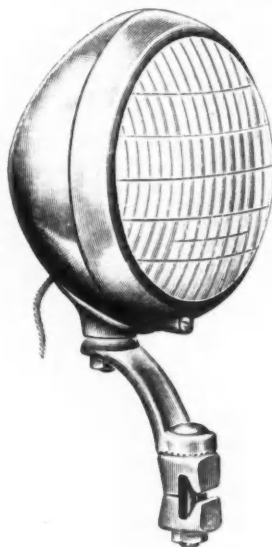
All six drawers are equipped with a slide which prevents them from tipping



their contents when pulled out their entire depth. The bottom compartment provides ample space for bulky equipment. Two of the casters are fitted with stop locks to prevent the unit from rolling while being used as a work bench.

### K-D Sealed Auxiliary Lights

The K-Lamp Co., Cincinnati, Ohio, has announced a new series of auxiliary lights



using the sealed beam principle. Model 861, designed for installation in pairs, constitutes a driving light and a passing light. Each may be hooked to opposite sides of the foot dimmer switch so that the driving light comes on with the upper beam, the passing light with the lower beam.

Model 865 is the new adverse weather lamp, also with sealed unit, which features a distinctive dual-tone lens with top and bottom sections of amber and a center section of crystal glass. Each model is manufactured in accordance with prevailing standards and has been tested by the Electrical Testing Laboratories, Inc. Applications for state approvals have been made.

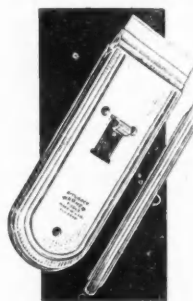
### Toledo Water Pump Tool

A new and highly useful device, a Water Pump Re-facing Tool, has just been introduced by The Toledo Steel Products Co., Toledo, Ohio. The Tool is designed for re-facing the sealing surface of the worn housing on seal-type pumps. Offered in a compact hardwood block container which prevents loss or damage to the pilots, cutters and other parts. Pilots included with the tool are offered in sizes suitable for any of the standard makes of cars. Extra Cutter and extra Emery Finishing Discs are also available.

### New White Sidewall Cleaner

A specially compounded paste cleaner for removing travel and curb stains from white sidewall tires has been introduced by the B. F. Goodrich Co., Akron, Ohio. Need of the new cleaner was stimulated by the reversible "white-and-black" tire recently put on the market by Goodrich.

### Handy Pocket Scraper



A handy scraper for incidental use about the shop has been developed by the Warner Mfg. Co., Minneapolis, Minn., 801 16th Ave., S. E. The razor blade edge can be instantly expelled or repelled by a flip of the thumb on the center lever. New

blades may be slipped in in a moment by sliding the blade endwise.

### Ajax Silver Horses

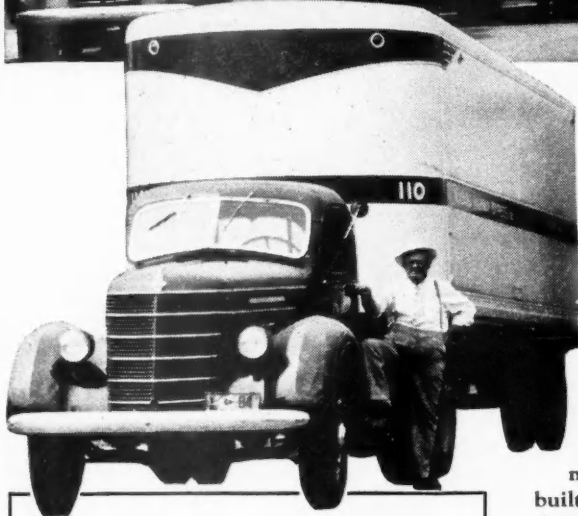
Making full use of the light weight and structural strength of a cone, the Ajax Auto Parts Co., Racine, Wis., has engineered a new conical shaped, 2-ton adjustable support rack.



Called "Silver Horses" because of their high silver finish, the new racks have a lifting range from 11 in. to 17 3/4 in. A large handle makes placement easy. The price is \$3.75 per pair.

(TURN TO PAGE 72, PLEASE)

# Lighter Weight-Greater Strength AT NO EXTRA COST!



—because the body panels  
are "PRE-TENSED"

## LINDSAY STRUCTURE All-Steel Truck Bodies offer Six Advantages

1. LIGHTER WEIGHT
2. GREATER TIGHTNESS  
AND RIGIDITY
3. EASIER TO REPAIR
4. LONGER LIFE
5. CAN BE BUILT  
TO ANY SIZE
6. NO EXTRA COST

You can cut the weight of your truck bodies without using softer metals or special alloys. Bodies built of all-steel patented Lindsay Structure weigh no more than bodies of equal strength made of more expensive materials.

Lindsay Structure bodies get strength with lightness by using steel more efficiently. The body panels are "Pre-Tensed" to hold the framing members in a rigid reinforcing grip. Thus, the strength in *all* the steel—panels as well as framing—is instantly available to resist wracking stresses and pounding.

There are no weld points or rivet

holes in Lindsay Structure bodies for stresses to concentrate and loosen the structure. Road tests show that these bodies stand up under heavy loads and rough roads without working loose.

In the case of damage resulting from accidents, body repairs can be localized to the damaged sections. Any single section can be quickly replaced from the outside without disturbing the other sections.

Lindsay Structure bodies are made of parts fabricated by mass production methods. They can be custom-built to within 1/2 inch of any desired size. Write for details. Dry-Zero Corporation, 222 North Bank Drive, Chicago.

There is an AUTHORIZED Ls BODY BUILDER in your locality

## LINDSAY STRUCTURE



## TRUCK BODIES

UTILIZES THE STRENGTH OF ALL THE STEEL



WHEN the White Motor Co. produced the White Horse for multi-stop service it represented a radical departure from any vehicle which the company had built up to that time. Sufficient time and study had gone into the conception of the truck to give the company complete confidence in the functional ability of the truck. There has never been any doubt in the engineering department but what a truck of that design would do a definite transportation job. Dimensions, amount of power, etc., had been checked against requirements to the satisfaction of all concerned.

Cost of operation was something else. The new design of the vehicle made it impossible to estimate the life of the unit or of its wearing parts. Just what was going to happen to the vehicle in the hands of owners was something that only service experience could tell. In the type of service that the truck was designed for it takes a great deal of time to get records that would be indicative of vehicle life or cost of operation. With such a specialized vehicle it was impossible to find an owner that piled up experience faster than the average.

In order to get some service facts the White Motor Co. took a test truck and drove it 40,551 miles between Aug. 16, 1939, and Feb. 28, 1940. This mileage was accumulated during 2088 hours of driving, during which time the truck was stopped and started 41,532 times. It consumed 2677 gal. of gasoline and 87 qt. of oil. This was figured as equivalent to about 5 years service.

The truck, still carrying the 2000 lb. load that it had carried throughout the mileage, was driven to the Case School of Applied Science, in Cleveland, where it was disassembled. The Staff of the Laboratory inspected all of the parts of all the units checking for wear with micrometers and gages.

This did not provide any information on the body so it was decided to roll the body down a sharp embankment about 100 ft. high. During this process the body was dented and the front posts broke through but no weld failed. The body panels were cut open so that an examination of the insulation and walls could be made and these were found to be in perfect condition.



Top: Engine parts cleaned and ready for inspection. Left: Repeated jerks finally tore the metal away, but buttons (lower left) show that the welds held. Remaining photos show power unit being removed for inspection, the final roll down the 100-ft. embankment, and the body, still essentially intact, after roll

## A CASE STUDY

**of a White Horse that was operated for 40,000 miles and then subjected to tests**

Another body was taken from the assembly line and one end of it was chained to a post while the other end was fastened to a truck. The truck by repeated jerks finally tore the metal away but did not cause any weld to fail.

The disassembly and body tests

were witnessed by a number of fleet operators and newspaper men who selected from the assembly line the body that was pulled apart. The results of the laboratory check on chassis parts are being assembled by the White Company in the form of a brochure.





# NEWSCAST

BART RAWSON COMMENTATOR



## Highway Transportation Show Signs Space at N. Y. Fair

Billed as the largest new exhibit yet added to the New York World's Fair for 1940 which opens May 11 is the National Highway Transportation Show sponsored by National Motor Truck Show, Inc. Contracts for 30,000 sq. ft. of space in the transportation area of the Fair have been signed by J. F. Winchester, president of the truck show corporation, and Harvey D. Gibson, chairman of the Fair's board. Among those already allotted space are the following:

Reo Sales Corp., Mack Trucks, Inc., Heil Co., Gar Wood Industries, Transportation Engineering Corp., Hercules Motors Corp., Marmon-Herrington Corp., Diamond T Motor Co., Trucktor Corp., Bendix Westinghouse Automotive Air Brake Co., Thornton Tandem Co., Galion Body Co., Young Windows of America, Anthony Body Corp., Cousmobile Corp., and Eaton Mfg. Co.

One of the largest exhibits will be that made up by manufacturers of special equipment for Ford commercial vehicles, under the leadership of the Ford Motor Co.

## Supreme Court Upholds Acme Case

On April 8, the U. S. Supreme Court affirmed the Acme Fast Freight case which found that freight forwarding companies are not common carriers within the Federal Motor Carrier Act and hence not entitled to certificates of convenience and necessity.

## ... and the Penna. Car-Over-Cab Law

On April 22, the U. S. Supreme Court also upheld the constitutionality of the Pennsylvania statute prohibiting car-over-cab operations. The ICC had contended that this law conflicted with the Federal Motor Carrier Act, but the Court said the regulation of size and weight falls within state jurisdiction.

## ICC Exempts Low-Value Cargoes

The ICC has exempted certain carriers of low value commodities from cargo insurance requirements. Included in the order (in Ex Parte MC-5) are such commodities as ashes, cinders, coal, coke, cottonseed hulls, forest products, garbage, gravel, ice, iron ore, manure, salt, sand, scrap iron, oyster and clam shells, slag, slate, stone, sugar beets and water.

## TRUCK PRODUCTION

(United States and Canada)

	1940	1939	Per Cent Change
January	73,999	64,093	+ 15.8
February	71,699	63,606	+ 12.8
March		77,103	
April		68,066	
May		63,793	
June		66,964	
July		62,644	
August		40,868	
September		27,559	
October		65,078	
November		73,407	
December		83,825	
Total		757,006	

## Dealers Under Chain Store Bill

Representative Patman told the House Ways and Means Committee early last month that automobile distributors supervised by manufacturers would come within the provisions of his chain store tax bill. He also stated that lessee-operated gasoline stations handling exclusive lines and various types of tires stores would fall within its jurisdiction.

## Young Heads Transport Study

Owen D. Young, former chairman of the board of General Electric Co., has been nominated by President Roosevelt to direct a comprehensive study of transportation problems under the auspices of the National Resources Planning Board.

## Utah Forces Diesel Tax Showdown

Utah, still embroiled in a controversy over the status of diesel fuel with regard to tax purposes, has filed application with the State Supreme Court for a writ of mandamus to compel the Tax Commission to collect a tax on diesel fuel. Purpose of the move is to force a decision as to whether or not the gasoline tax applies.

## Egger to Handle ATA Publicity

The job of handling the increased publicity and advertising activities of the American Trucking Associations, Inc., has been handed to E. R. Egger, public relations director of the Central Motor Freight Association, Chicago.



Reid Railton, famous British racing car designer and builder (second from left), joins Chrysler Export Division executives to inspect Dodge four-wheel-drive truck destined for overseas shipment. The U. S. Army has recently purchased 10,786 similar units. In picture, left to right, are C. E. Dalton, Mr. Railton, C. B. Thomas and Wendell H. Welch

## ICC Defines Certificate Rights

A certificate issued to a common carrier of property over authorized routes includes the right to carry "all types of property capable of transportation by ordinary motor vehicle," according to a recent statement by the ICC, but unless specifically provided, it does not authorize the use of special facilities or special vehicles.

## Railway Agency Asks Review

Following a recent ICC decision which found its over-the-road operations subject to the Motor Carrier Act, The Railway Express Agency has asked reargument and reconsideration of its case, holding the view that its operations should be regulated by Part I of the Interstate Commerce Act.

## New Stewart Corp. in Production

Taking the name of the former Buffalo company now in liquidation, the Stewart Motor Corp., backed by some Indianapolis capital, has started manufacture of motor trucks under the Stewart name in a plant at 201 Urban St., Buffalo. The first truck has already been completed.

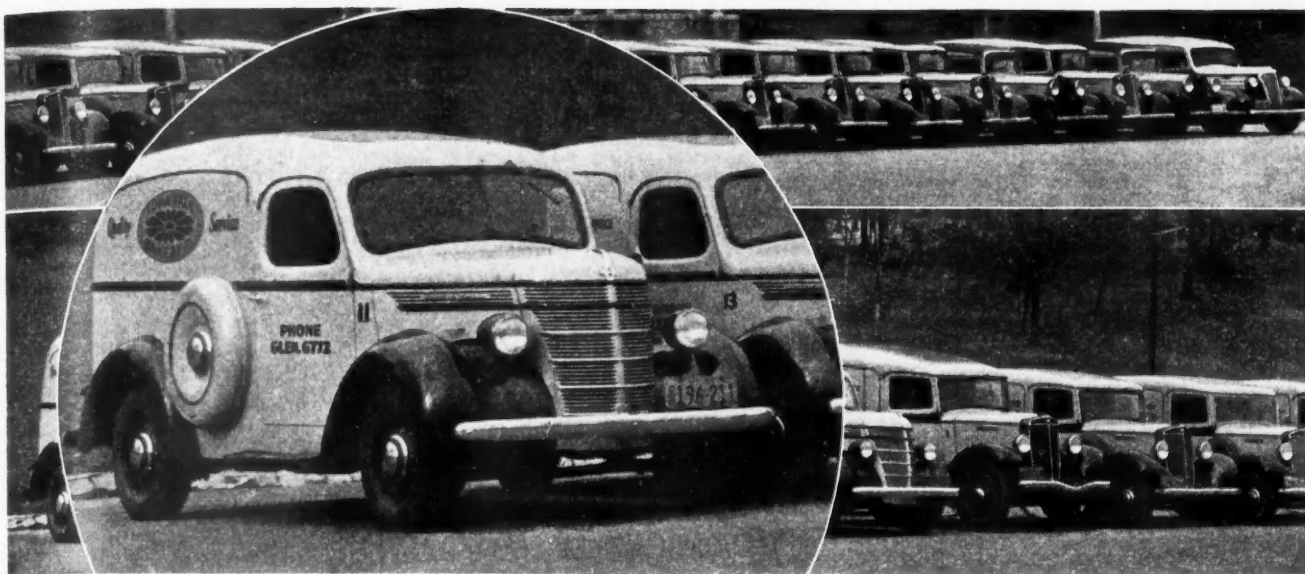
The company's personnel, according to John A. Lux, general manager, is made up of former Stewart employees. The new company will concentrate principally on the manufacture of three large models similar to the larger units formerly produced at the old plant. Production of trucks will be on a small scale at first, Mr. Lux said. President of the Stewart company is E. E. Letzter, of the Indianapolis Machinery Supply Co.

## Bendix to Market Leibing Degasser

Of interest to fleetmen troubled by gas fumes is the announcement of a new agreement whereby Bendix, through its Zenith and Stromberg Carburetor Divisions, becomes world-wide distributor for the Leibing Degasser.

While field reports during the past two years indicate marked success for the Leibing device, its use has been limited by the need for special carburetor equipment in conjunction with the degasser. The problem, however, will soon be minimized by the introduction of a number of carburetor types built by Zenith and Stromberg to accommodate the unit.

(TURN TO PAGE 50, PLEASE)



## 1,613,376 miles without a gear failure

*That's the seven year record of Lubri-Zol Fleet Oil for the Town Talk Bakery, of Rochester, New York. Mr. Schmitt of the bakery writes —*

● To appreciate why Lubri-Zol Fleet Lubricants are able to turn in records like this, it is important for fleet operators to understand how and why *Lubri-Zol is completely different from ordinary fleet lubricants.*

Lubri-Zol Fleet Lubricants are specially processed under the exclusive Lubri-Zol patents. Lubri-Zol uses the best base stocks available. The highly desirable characteristics of these excellent base stocks are changed, improved, given added values by Lubri-Zol processing. For instance, film strength is increased up to eight times greater than untreated base stocks so Lubri-Zol can readily resist the heavy pressures of hard-going fleet service. In addition, Lubri-Zol Fleet Lubricants possess a highly important gum solvent and sludge retardant action. The resulting stability assures you of maintained lubrication over longer periods, freedom from break-down, and positive reduction in costs.

Write to Lubri-Zol today for full particulars. Lubri-Zol can help you lower costs and get more profits. The Lubri-Zol Corporation, Cleveland, Ohio.

"We operate a fleet of 21 International Trucks in and around the City of Rochester, N. Y.

"Before using Lubri-Zol products, we had a large number of transmission and differential failures, which made our fleet operation very troublesome and expensive.

"We have used Lubri-Zol lubricants for the last seven years. In this time, our fleet has covered 1,613,376 miles without a gear failure. Our cost sheets also show a great reduction in other maintenance expense, which is due to the use of Lubri-Zol lubricants.

"Lubri-Zol products, in our opinion, are the best a fleet operator can use."

Fully Protected by U. S. and Foreign Patents

# LUBRI

REG. U.S. PAT. OFF.

# ZOL

*Buy your oil on  
the cost per mile...  
and save... with*



## NEWSCAST

(CONTINUED FROM PAGE 48)



White Motor Co. has announced a new order from the French Government for 145 six-wheel trucks equipped with 18,000 liter tanks for petrol transport "somewhere in France." Each truck has two driving axles and will carry a 15-ton load. The order, totalling \$1,250,000, follows shipment of 1500 smaller White's to France during recent months.

### Texas Truckmen Begin New Campaign for Load Law Repeal

A campaign to repeal the Texas 7000 lb. load limit law was launched on April 3 when the Private Truck Owners Association of Texas sponsored a statewide conference of private truck operators. The conference, called for the purpose of discussing all problems faced by private truck owners, is expected to be followed by monthly meetings until the Texas Legislature convenes early in 1941. The subsequent meetings also will be sponsored by the private truckers' association.

Reflecting optimism that the 7000 lb. load limit law will be repealed, more than 30 representatives at the conference heard William H. Ott, of the Kraft Cheese Co., Chicago, and president of the National Council of Private Motor Truck Owners, discuss the plight of the nation's private motor truck owner and operators; Ray Blair, Southern representative of the National Highway Users Conference, on problems facing highway users; J. E. McDonald, Texas Commissioner of Agriculture, on agriculture and transportation; State Senator J. Manley Head, on state trade barriers; E. S. Mayer, of San Angelo, president of the Texas Sheep and Goat Raisers Association, on the "economically unsound" 7000 lb. truck load law; and Albert Brown, of Lampasas, secretary of the Central Texas Trading Co., on the question "can you retain your motor truck independence without organization?"

Presiding at the conference was Galen H. McKinney, president of the Texas Private Truck Owners Association, and vice president and general manager, Waples-Platter Co., Fort Worth. An open discussion followed the program.

The Texas load law, passed under the guise of a safety measure, permits a load of 14,000 lb. when hauling to the nearest railroad station but fixes a limit of 7000 lb. under all other circumstances.

On March 25, the U. S. Supreme Court dismissed the case of Rayburn et al vs. Richardson et al, which had sought to prevent enforcement of certain provisions of the 7000 lb. law which were claimed to be arbitrary.

### Getting Personal

Yale D. Hills has been appointed assistant general manager of the service-sales division of The Timken Roller Bearing Co. J. F. Cornell, branch manager at Minneapolis for the service-sales division takes the position of special representative, with headquarters at Canton, Ohio, and J. P. Roberts, from the Pittsburgh office, replaces Mr. Cornell at Minneapolis.

Pierre Schon, who for the past 25 years has been associated with the Yellow Truck & Coach Co., has resigned to take over the General Motors Truck Dealership in Jacksonville, Fla.



Karl Mindeman, who has been in the sales department of The Heil Co. at the home office in Milwaukee, is now working out of the New York and Boston branch offices as Connecticut representative.



A. L. Struble, just named general sales manager of the Fruehauf Trailer Co. Before he came to Fruehauf recently he occupied a similar position with Reo.

H. H. Cohenour has resigned as advertising manager of the Sunnen Products Co., St. Louis and has taken the position of advertising manager of the Buda Co., Harvey, Ill. Russell R. Hughes, former advertising manager of the Buda Co. has been named midwest sales representative selling automotive and industrial engines to manufacturers.

C. F. Watson, who was recently appointed by Studebaker Corp. as regional manager in the Cleveland branch



Roland Whitehurst, formerly manager of Exide Washington branch, is newly appointed assistant general sales manager of The Electric Storage Battery Co.

Lee M. Clegg, senior vice-president of Thompson-Products, Inc., and recently elected executive vice-president. He is also a director of the company



### Retzlaff Represents Kingham

E. J. Lucas, sales promotion manager of Kingham Trailer Co., Louisville, Ky., announces the appointment of the Acme Trailer Co., headed by W. G. Retzlaff, president, as distributor for Michigan and upper Indiana. Acme is located at 1832 W. Fort Street, Detroit. Complete facilities are available.

Mr. Retzlaff is well known in highway transportation circles. He has been identified in important executive capacities, for the past 18 years with the Fruehauf Trailer Co., and the trailer division of General Motors Truck.

### Caleb W. Shiply Dies

The death of Caleb W. Shiply in Cincinnati, Ohio, on April 7, marked the passing of a founder and former president of Trailmobile and a pioneer in the modern freight transport industry.

### Industrial Notes

Chevrolet's domestic production of 1940 models passed the 700,000 mark on April 16, according to M. E. Coyle, general manager.

"March domestic deliveries were 106,091 units," Mr. Coyle stated, "which parallels closely our production for the same period."

Rising 41 per cent over the preceding month, retail sales of Ford trucks and commercial cars during March were the heaviest for any March since 1929 with the sole exception of 1937.

Sales to customers totaled 18,829 units. This was a 20 per cent increase over March of the previous year.

March sales of The Studebaker Corp. were the largest for the month since 1929. First quarter factory sales also set an eleven-year record, amounting to 29,366 passenger cars and trucks compared with 19,746 units sold in the corresponding period of 1939, a gain of 49 per cent. March sales of 11,391 units compared with 10,208 in March, 1939, the first month of production of the Company's low-priced Champion.

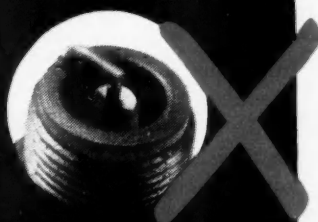
The Lee Tire and Rubber Co., Conshohocken, Pa., has been awarded a contract to furnish automobile tires to the various departments of the Commonwealth of Pennsylvania for 1940, amounting to \$170,000.

Operations of the Differential Wheel Corporation of Detroit for the year 1939 resulted in a sales increase of one-half million dollars over 1938, and a net profit of \$19,848.79.

# Stopped by AC!

**Fouling  
and**

**CRACKING**



## WHAT HAPPENED—

(A Massachusetts bus line experience). The 18 mm. plugs on the exhaust manifold side of dual ignition engines were developing cracked porcelains at low mileage. The 14 mm. plugs in other units were fouling early. As a remedy for the cracking, AC 18 mm. plugs of cooler temperature were tested; and, as a cure for the fouling, tests were run with 14 mm. AC's of hotter temperature. A regular cleaning and regapping schedule was set up. The operator reported, "Now using AC's 100%. Have had no failures since making the changes."

## WHY AC'S SOLVED THE PROBLEM—

The Heat Range of AC Spark Plugs is more complete than that of any other brand. So, it was a simple matter to select 18 mm. plugs which were sufficiently cooler to eliminate the cracking; and 14 mm. plugs which were hot enough to stop the fouling.

Thousands of operators have solved their plug problems through the AC Heat Range. In fact, no spark plug trouble has yet been found that AC's couldn't cure,—no matter what the service.

The AC Heat Range, backed by a plug design and quality second to none, is your assurance of full spark plug satisfaction.

**Standardize on AC  
FOR BEST ENGINE PERFORMANCE**



## AC Spark Plug CLEANER (Model C)

Product of 5 years of cleaning experience among 70,000 users. Cleans and dusts in one operation. Does a faster and better job.

**Order from Your AC Supplier**

AC SPARK PLUG DIVISION • General Motors Corporation • FLINT, MICHIGAN

COMMERCIAL CAR JOURNAL  
MAY, 1940

When writing to advertisers please mention Commercial Car Journal



## —For 31 Years THE QUALITY SPARK PLUG

Chevrolet, Diamond-T, Federal, GMC, International and White Trucks; Buick, Cadillac, Chevrolet, LaSalle, Nash, Oldsmobile, and Pontiac motor cars; Allis-Chalmers, Cletrac and International Harvester Tractors . . . these are some of the well-known trucks, cars, and tractors which use AC Quality Spark Plugs. Trust your spark plug requirements to the same brand of spark plugs which the leading, big-volume manufacturers select.

## TRUCK RATING CRITICISM

(CONTINUED FROM PAGE 28)

### 4. Pounds per Cubic Inch Displacement

One prominent engine builder stated that in his experience of many years he has found that a tractor-trailer operation was successful, speedy and economical, if the gross load, for 4-cycle engines, were limited to 100 lb. per cu. in. of engine displacement.

It will be found, by comparing

published data, that there is a reasonably close relation between Torque (pulling power) and Displacement.

The "Displacement" rating would have the further advantage that it can, by enforcement officials, so easily be verified.

### 5. S.A.E. Rating by Horsepower

The rating committee of the S.A.E. has recommended that the maximum horsepower developed by the engine shall be the measure of the load that can be pulled. In other words, the

I.C.C. or local state governments would be expected to state that so many pounds gross could be carried for every horsepower developed by the engine. This S.A.E. truck rating committee includes engineers of all the prominent companies and they have given careful consideration to this rating for a number of years. It goes without saying, therefore, that this method of rating, representing a majority opinion, must be supported by some very valid reasons.

Arguments could be presented pro and con almost without end. However, let us assume that this horsepower recommendation becomes the basis for a Federal law and then try to find out, if possible, how this law would affect the trend of motor truck engine design and the selection of motive power by the purchaser.

Suppose that a truck buyer decides that the load he wishes to carry requires, according to the formula, an 80 to 90 horsepower engine. Let us then scan the entire motor vehicle field to see what engines are available under this rating and how they compare.

Let us try to picture the steps that precede the placing of a typical truck-trailer on the highway.

1. An individual, or company, gets a contract to haul goods from one town to another.

2. Freight rates, whether by rail or highway, are more or less fixed, so that it is found that the smallest payload, which will allow expenses to be met, is a minimum of 10 tons.

3. Experience, backed by investigation, tells our typical truck buyer that his minimum gross weight will be in the neighborhood of 32,000 lb.

4. His ten tires, therefore, must have a corresponding carrying capacity which is supplied by a size of 9.00/20.

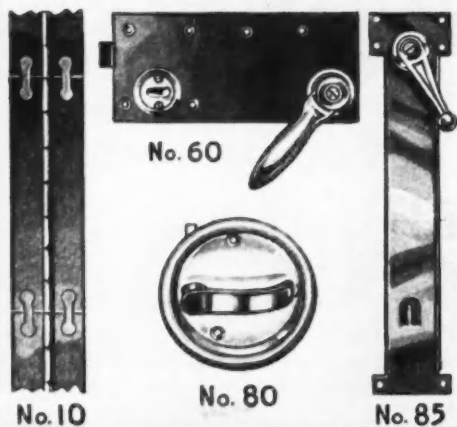
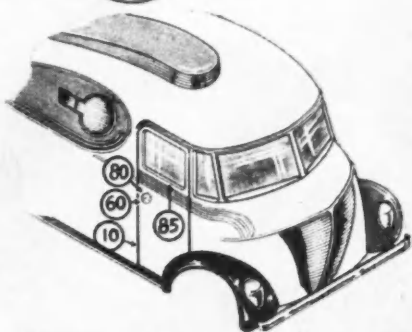
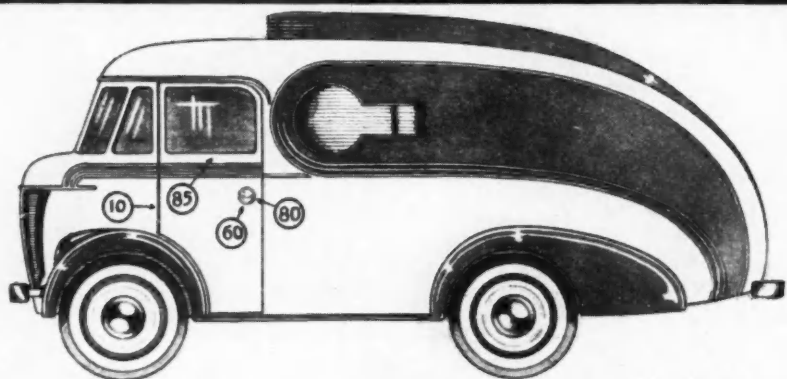
Some operators use smaller tires with an increase of tire trouble; and others use larger tires for safety and economy.

5. Brakes must be of adequate size, not only for public safety, but for his own operating protection.

6. Load on trailer axle and on tractor rear axle will be between 14,000 and 15,000 lb. each. Therefore, frame, springs and rear axle—not to mention the front axle and steering gear—must be strong enough to carry the load.

(TURN TO PAGE 54, PLEASE)

## HANSEN *Increases Advertising and Service Value-*



**A** PPEARANCE plus performance combine to make Hansen Hardware the leader among body builders, designers and users.

Its attractiveness adds a dash of class to body design and readily lends itself to various body designs to provide maximum advertising value.

Its simplicity insures easy application and time-saving operation. Its ruggedness provides long, dependable performance—often outlasting the body itself.

From every standpoint—appearance, application, performance—Hansen gives *extra value*.

### ASK FOR CATALOG

No. 10 Continuous Hinge. Standard 12" lengths, for making hinges of any length.

No. 60 Extension Lock. One-piece construction. No loose parts to assemble.

No. 80 Flush Handle. Fits flush with door. Interchangeable for right- or left-hand operation.

No. 85 Window Regulator. Straight lift. No sticking or jamming. Rapid operation.

**A. L. HANSEN MFG. CO.**  
5047 RAVENSWOOD AVE., CHICAGO, ILL.





# TWO INSURANCE POLICIES *against high operating costs*

## Policy No. 1



## SEALED POWER *Individually Engineered* PISTON RING SETS

—now available for leading cars and trucks—pay extra dividends in oil economy—increased power and longer engine life. Here's why: Sealed Power engineers develop the right types of compression and oil rings to fit the characteristics of each engine design. This results in a ring installation which insures adequate lubrication and maximum power with blow-by and oil consumption reduced to a minimum. Try a few installations and let your own records tell the story.

## Policy No. 2



## SEALED POWER PISTONS of LO-EX\*

The outstanding dividend record of long service resulting from the use of Sealed Power pistons of Lo-Ex is the chief reason fleet men, in particular, prefer them. They have greater strength with less weight . . . are unusually resistant to wear . . . and have a lower coefficient of expansion. Available for all leading passenger cars and commercial vehicles.

\*Lo-Ex is a trade-mark for pistons cast and alloys produced exclusively by the Aluminum Co. of America.

### SEALED POWER CORPORATION

MUSKEGON, MICHIGAN

Canadian Factory, Windsor, Ontario

*Piston Rings, Pistons, Pins, Valves, Sleeves, Spindle Bolts, Bushings, Water Pumps, Tie Rods, Front End Parts*



# SEALED POWER

LONG THE RING LEADER.. NOW THE LINE LEADER

(CONTINUED FROM PAGE 52)

7. Engine. Let us assume that the Rating by Horsepower has become a law. Let us further assume that the load the operator decided to carry requires, by law, an engine of not less than 80 to 90 horsepower. By law, what sort of engines could he select?

Refer to the chart, which lists various types of engines. (Only engines offered by leading manufacturers are included; specifications as given in automotive magazines.)

(a) He could, by law, use a 91 cu. in. engine (racing type) and the law could not say no. It would develop: 87 Ft. Lbs. Torque.

91 Horsepower.

(b) He could select, by law, a passenger car type of engine of about the following specifications:

175 Cu. In. Displacement.

175 Ft. Lbs. Torque.

92 Horsepower at 4000 R.P.M.

(c) He could select an engine, just like thousands of others on the road, of the following specifications:

220 Cu. In. Displacement.

160 Ft. Lbs. Torque.

78 to 85 Horsepower at 3000 to 3200 R.P.M.

Chassis Weight, 3500 Lbs.

(d) Based upon his previous experience, he may select a much larger Truck-Type engine, still in the 80-90 horsepower class, which he finds more suitable to his territory, and having the following general description:

350 Cu. In. Displacement.

250 Ft. Lbs. Torque.

88 Horsepower at 2400 R.P.M.

Chassis Weight, 7000 Lbs.

Now this man has spent about four times as many dollars for a big, strong, powerful chassis as did many of his competitors having smaller equipment; but, on account of increased chassis weight, he finds that, by law, he must haul a payload weighing 1½ to 2 tons LESS.

(e) Diesel Engines. The air waves, newspapers and magazines combine in heralding the advent of a new day in motive power—the diesel engine.

Our truck buyer thinks there must be something in this idea and he looks around for an 80-90 horsepower diesel engine. What does the truck industry offer him?

83 to 90 Horsepower.

212 to 308 Ft. Lbs. Torque.

285 to 468 Cu. In. Displacement.

300 to 2000 Lbs. Engine Weight.

6000 to 9000 Lbs. Chassis Weight.

It's really painful what this customer has to pay to get this big, powerful, economical equipment; but, when he gets his allowable Gross Rating, he finds it just the same as for a light chassis equipped with high speed engine, costing about one-tenth as much. But, due to increased chassis weight, his payload is 2½ tons less.

He wants to buy big, safe equipment, but competition backed up by Federal LAW will say NO.

In the 115 to 125 horsepower class, the law will say he can select almost anything from a light, high speed engine with a 220 cu. in. displacement and 180 ft. lbs. torque clear up to a Diesel engine having 520 cu. in. displacement and 350 ft. lbs. torque, with chassis weights up to 11,000 lbs.

Now, nobody would be foolish enough to think that a truck operator would try to use a 91 cu. in. engine

(TURN TO PAGE 56, PLEASE)



**"OVERTIME AGAIN!"**  
*"And right here's  
 the reason for it!"*

"See where the truck stood still for two whole hours?  
 From 2:00 to 4:00 she never turned a wheel."

"No wonder there was overtime!"

Righto. So don't have your trucks working after hours when they could finish everything during hours.

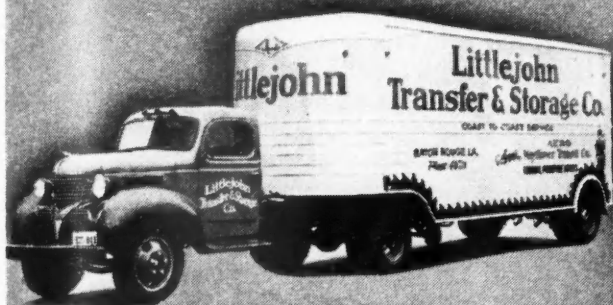
The Servis Recorder DISCOURAGES that kind of Idle Time that causes expensive and unnecessary Overtime—because its chart tells you the whole situation at a glance.

Write for free Booklet: "Ten Ways of Getting More Work Out of Motor Trucks." THE SERVICE RECORDER COMPANY, 1375 Euclid Avenue, Cleveland, Ohio.



**The Servis Recorder**

Tells Every Move Your Truck Makes



→ *Kem Transport Enamel turns this Littlejohn Transfer and Storage Company's trailer into a coast-to-coast traveling advertisement.*

# KEM COVERS THE TRANSPORTATION WORLD



→ *This Albrecht Bakery trailer not only transports quality products but looks it, thanks to Kem!*



## Style and Color your Fleet with KEM!

Modern fleets not only deliver the goods, they advertise the goods delivered, or the services rendered...advertise them as strongly and brilliantly as possible right on the delivery units, themselves.

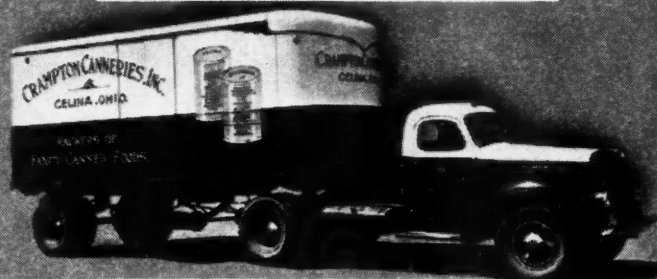
That's why you'll find Kem Transport Enamels stepping-up the attention value...selling power...of America's leading fleets. Kem colors are more brilliant...vibrant...lasting. Kem enamels give a cleaner-cut, sharper, more gloss-smooth finish that stubbornly resists dirt...washes like tile.

And Kem's remarkable ease and speed of application, lasting protection, rugged durability, get the serious attention of fleet owners with a weather eye on costs!

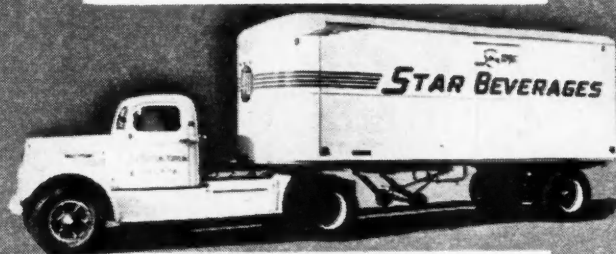
Specify Kem for your next paint job. Let it prove itself! Call in the S-W Paint Technician. Or write The Sherwin-Williams Co., Cleveland, Ohio and all principal cities.



→ *Kem Transport White and Chrome Green Medium step-up the attention power of this Marie Gas and Oil Co., trailer.*



→ *High visibility, sleek good-looks feature this Kem finished trailer of the Crampton Canneries, Inc.*



→ *Who could fail to identify this Star Bottling Works Inc., Kem Transport Enamel finished unit?*

# SHERWIN-WILLIAMS KEM TRANSPORT ENAMELS



(CONTINUED FROM PAGE 54)  
to pull a highway trailer. And not many truck operators would try to run a truck engine continuously at 4000 R.P.M.; but that is just what he would have to do to obtain the rated horsepower. In other words, it might be there, but not available.

This horsepower rating, to the casual observer, would seem to promote or almost compel the use of the high speed, light type of engine, crawling over the hills in "creeper" gear. This, it is evident, is just exactly what the public is trying to get rid of.

If the proposed horsepower rating should allow the pulling of the same gross load by engines varying from 91 cu. in. to 465 cu. in., then it appears that this method of rating would fail to accomplish its purpose.

Many fleet operators have some of their trucks equipped with small engines, pulling heavily loaded trailers, and some larger, heavier engines, pulling similar pay loads. Would it be beneath our dignity to ask some of these men which equipment they send over the mountains?

Side-stepping, for the moment, all

of the scientific arguments stating that "after all, the amount of horsepower delivered is the true measure of performance," maybe it would be sensible to look at the chart and to guess what will happen, if the horsepower recommendation becomes a law.

## TRUCK RATING DEFENSE

(CONTINUED FROM PAGE 29)

demonstrated that three vehicles with identical ability at one point (viz. 4 per cent at 20 m.p.h.) may vary in one direction on a 5 per cent grade and in a different manner on a 3 per cent grade. Making a ridiculous application of the method it would be possible to arrange a vehicle so that the quoted 20 m.p.h. would be the maximum speed possible on the level.

The third method, "Army Specifications," serves its purpose because it is based on experience. In this case the buyer has determined that if the vehicle can meet this specification it will satisfy his needs. That it would suit any other buyers is not

only not demonstrated but is also quite unlikely. It will also be found that the "Army Specifications" usually comprises several requirements as to speed and grade ability which closely limit the possible applications. It is, of course, obvious that if no other information is given than the formula quoted by Mr. Winans and no limitation is placed on the axle ratio that even within the limits of present constructions a wide variation in torque will provide equal "Grade Ability."

The fourth method, "Pounds per Cubic Inch Displacement," is in the same category as the third with the added objection of assigning a fixed value for the torque per cubic inch which can be produced. While it is true that engines of today are roughly comparable as to torque output, it will be found that this does not hold true for today's engines and those of 10 years ago. There is, therefore, a fair assumption that the next 10 years will produce similar changes.

The "S.A.E. Rating by Horsepower" is believed by those who favor it, among whom the present writer wishes to be included, to meet

# DON'T PLAY WITH BLOCKS



Don't fool with friction materials. Standardize on Grey-Rock Brake Blocks and Clutch Facings. You'll cut out costly experimenting, protect property and save lives. See your Grey-Rock jobber for trouble-free starts and stops.

You will approve the engineered plan and the specific instructions your Grey-Rock jobber uses. Grey-Rock brake blocks, factory selected for each truck, assure balanced brakes under every operating condition. They mean safe, long-lasting brakes, and savings in time, money, and trouble.

Investigate, too, the built-in nested strength of Grey-Rock, Vee-lok Clutch Facings, revolutionary in the smooth way they take hold of heavy loads. They're especially built for long-life operation at high temperatures.

Buy friction materials on the Grey-Rock plan. The results will show on your profit sheet, as any Grey-Rock jobber can easily demonstrate.

# Grey-Rock

the objections to the other methods and provide an expression for the potential ability of a vehicle more satisfactorily than any other.

Vehicles having the same ratio of weight to horsepower can be made to perform in a similar manner with appropriate selection of gear ratios. On the other hand, vehicles with the same displacement cannot be made to perform on an equal basis unless the engines develop maximum horsepower at the same speed.

In the April issue of the *COMMERCIAL CAR JOURNAL* 10 engines of approximately 360 cu. in. displacement produce maximum horsepower at speeds of 2400 to 2900 r.p.m. Horsepower varies between 95 and 122. Torque varies between 233 and 280. These differences cannot be reconciled by gear ratio changes.

The hypotheses on which Mr. Winans bases his comments are naturally selected to illustrate his conclusions. They do not quite cover the subject.

It is questionable as to whether it is practicable to develop axles with ratios which will be adapted to the 91 cu. in. and the 175 cu. in. engines.

The chassis with the 220 cu. in. engine would certainly weigh more than 3500 pounds when the tires, brakes, frame, springs and axles which he indicates to be necessary are used. If these items are on a comparative basis it is quite possible that the disparity of weight, first cost and operating expense will not be as great as Mr. Winans supposes.

The comments regarding the Diesel engine are so far out of the picture due to conditions pertinent to the Diesel engine itself that discussion cannot be made on a fairly comparative basis.

If a law were passed which attempted to define a truck only by ability, the range of selection which Mr. Winans outlines would be within the realm of possibility. It is doubtful whether such an eventuality is probable in view of the study which is being put on the subject.

It is to be feared that the observations of the "Horse Power Rating" have been too casual if the result indicated is considered as a probable outcome. Naturally it will be possible to make a grossly improper axle ratio selection which will produce an

unsatisfactory and unprofitable result. Competition will take care of this possibility.

While in theory it might seem possible for 91 and 465 or even larger engines to provide equal performance, the practical difficulties of the problem place this possibility in the indeterminate future.

With the final paragraphs of Mr. Winans' article there can be no question. The possibilities and potentialities of the S.A.E. proposal should be subjected to the most stringent inquiry. If it cannot be demonstrated that the good it contains is greater than the bad, then it should be rejected. Personally the writer has no fear of the results of such a test.

#### Dealer Responsible for Tires

Of significance to car and truck dealers is the case of Nelson vs. Healey recently before the Kansas Supreme Court. This particular case was an action for damages brought by the wife of a car purchaser against a car dealer because a tire had blown out as the result of its defective condition at the time of sale.

The court held it to be the dealers duty to know that the tires were in safe condition and failure to make the necessary inspection did not eliminate responsibility.

## START AND STOP WITH GREY-ROCK



**Grey-Rock Rivet-On Blocks**—two types used alone or in combination to balance brakes on light trucks and buses. Grey-Rock Blocks (orange edges) medium friction, and HiWaY BloX (black edges) higher friction.

**Grey-Rock Bolt-On Blocks** for heavy truck and bus operations. Made in 5 types (G-K-R-N-Q) with varying characteristics, factory combined in sets for specific makes and models.

**Grey-Rock Recommendation Guide**, specifying combinations which balance any brake system under any load or operating condition, and providing all service information.

**Grey-Rock Vee-lok Clutch Facing**, a revolutionary V-nested endless spiral construction, setting new heavy-duty service standards.

## BALANCED TRUCK BLOCKS

UNITED STATES ASBESTOS DIVISION  
of Raybestos-Manhattan, Inc., MANHEIM, PA.  
BRAKE LININGS • CLUTCH FACINGS • FAN BELTS  
HOSE • PACKINGS • RELINING EQUIPMENT

## BROTHER

(CONTINUED FROM PAGE 25)

leaped into his cab and was gone.

It was all in a night's work to Louis Peterson, youthful driver for Jahneke Brothers, Joliet trucking concern. And he promptly forgot the incident as he guided his truck through the lashing storm toward Joliet and home.

But back on the road, the man withdrew his hand from his pocket

and penciled a notation on a scrap of paper.

\* \* \* \* \*

George Jahneke, manager of Jahneke Brothers, strode into his office, scooped up the morning mail, and settled down behind his desk. He felt very pleasant. Hadn't he just completed a three-year period of accident-free trucking service? That meant 600,000 miles without so much as a dented fender. Beyond a doubt, his drivers were competent, safe, and, above all, courteous.

The mail brought the usual bills, business correspondence, financial propositions.

But the mail also brought a sincere little letter that jerked George Jahneke erect in his chair. Here is the letter:

CHRISTIAN BROTHERS COLLEGE  
R. O. T. C. Unit  
MILITARY SCHOOL FOR BOYS  
6501 Clayton Road, St., Louis, Missouri  
August 20, 1939

Jahneke Brothers  
Joliet, Illinois  
Gentlemen:

May we take this occasion to compliment your company on the splendid courtesy accorded the Christian Brothers by one of your employees, early Friday morning, August 18. This true "Knight of the Road" did not disclose his name, but the I. C. C. number of his truck was 34703.

Twelve Christian Brothers were traveling to St. Louis from Chicago in our school bus. The very heavy rain storm had flooded the road and shoulder. As we were unfamiliar with the road we rode at a faster rate of speed than the condition of the road warranted. As a result our driver was blinded with an avalanche of water and steam when he struck a low spot in the road. When we gained our equilibrium we were off the road in a ditch in two feet of water. Our battery was dead and we were stuck. Like the man who was waylaid by robbers, we saw the trucks of your competitors pass by. Then came your good Samaritan who put us back on the road.

We want you to know how much we appreciate this courtesy. The cooperation of your employees in putting into action the fine policies of your company speaks volumes for the management. You may be sure that C. B. C. will long remember the courtesy of your "Knight of the Road."

Sincerely,  
CHRISTIAN BROTHERS COLLEGE  
(Signed) BROTHER DAMIAN  
Director

George Jahneke read that letter three times. Then he quietly arose and tacked it to the wall of the office. And he read the tribute once more.

Louis Peterson answered the summons from the front office. Mr. Jahneke pointed to the letter. Louis read it.

Then, to the amazement of his employer, Louis laughed.

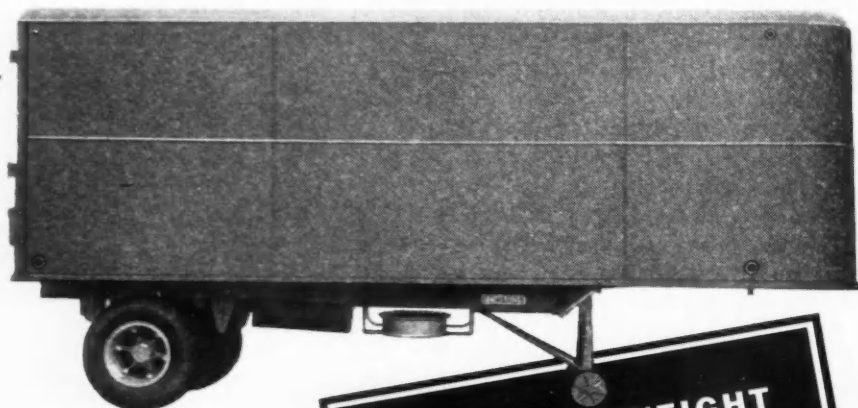
"What on earth is so funny, man?" demanded Mr. Jahneke. "Isn't that the greatest thing you ever saw?"

"Yes, boss, it surely is!" chuckled Louis.

"Well, what's the joke?"

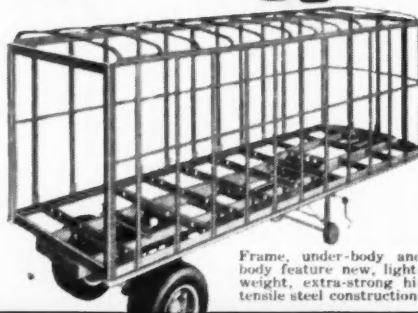
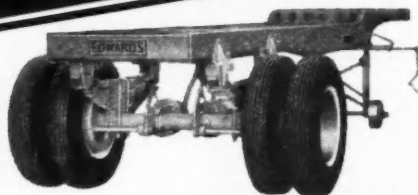
"My family. They keep telling me to get out of the habit of calling everybody I meet 'brother.'"

# AMAZING<sup>NEW</sup> TRAILER



**H**ERE'S a heavy duty trailer as light in weight as is practical. Featuring new hi-tensile steel construction... plus 25 important money saving features. No drastic departures from time-tested principles of design that have proved most satisfactory... most economical to maintain.

Edwards Trailers are easy rolling... of maximum width... carry bigger payloads because of reduction of deadload... and cost no premium. They will speak for themselves in operating profit. Don't buy any trailer until you investigate Edwards.



Frame, under-body and body feature new, lightweight, extra-strong hi-tensile steel construction.

# EDWARDS HI-TENSILE STEEL SEMI-TRAILERS

EDWARDS IRON WORKS, SOUTH BEND, IND.

DISTRIBUTORS - WRITE OR WIRE FOR PROFIT POSSIBILITIES

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL  
MAY, 1940



# STOPPING POWER!

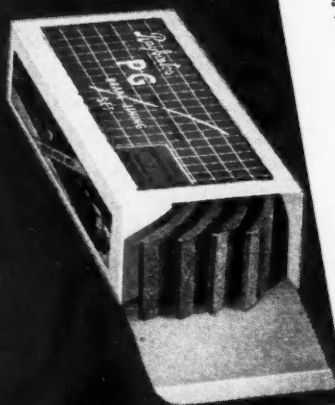
BOULDER DAM. Located in the Black Canyon of the Colorado River. Highest dam in the world, and the reservoir which it forms is the world's largest artificial lake.

● To hold back its actual capacity of ten million gallons of water, Boulder Dam is designed to stop forty million gallons... a 300 per cent margin of safety!

That same excess of safe stopping power is yours with Raybestos Heavy Duty Brake Lining! ... It's engineered to stop a truck with a load of 300 per cent greater than its normal capacity!

The new Raybestos Truck Recommendation Guide shows how you can get this greater brake safety for every vehicle in your fleet. Write for it, on your letterhead. It's free!

THE RAYBESTOS DIVISION  
of Raybestos-Manhattan, Inc.  
BRIDGEPORT, CONN.



# Raybestos

AMERICA'S BIGGEST SELLING  
**BRAKE LINING**

**"YOUR 2 BEST FRIENDS for HIGHWAY SAFETY"**

## Full Line of Diesel Trucks Offered by Reo

Reo's 1940 truck program has been further augmented by a complete line of five Diesel-powered models ranging in capacity from 13,000 lb. to 22,000 lb. with corresponding tractor ratings.

Each model will be built in three standard wheelbases of 120, 145 and 165 in. Due to Reo's new design, 9, 12 and 15 ft. bodies can be mounted on these wheelbases with ideal weight distribution. Optional wheelbases are obtainable on special order.

Four-cycle Buda-Lanova Diesel engines will be standard with displacements of

226, 294, 317, 389 and 468 cu. in.

Like other Reo models, transmissions are four or five speed types. Optional axles include spiral bevel, double-reduction and two-speed, the interchangeability of all major assemblies making it possible to build units fitted to a particular operation at production prices.

### Thornton 2-Speed, 4-Rear-Wheel-Drive for Fords

The Thornton Tandem Co. now has available complete data on the Thornton four-rear-wheel Drive unit for Ford trucks with two speed axles. This unit provides

capacities up to 15 tons gross vehicle weight and is especially suited for use by road builders, oil field operators and inter-city haulers requiring heavy-duty equipment. Body lengths of from 8 to 22 feet may be used with this installation.

The frame reinforcement is designed to accommodate gross vehicle capacities up to 30,000 pounds and dual spring suspension is provided to give proper support for the load with adequate protection against road and load shock.

The inter-axle gear case is equipped with the Thornton automatic-locking differential providing positive drive to both rear axles. A data sheet giving performance data in both speed and power ratios is available on application to the Thornton Tandem Co., 8701 Grinnell Ave., Detroit.

*Autopulse is the only Pump you need*



**to feed fuel to your every truck ... and Do It Better**

If tie-ups due to failure of engine-mounted pumps have been giving you grey hair, **replace** these schedule killers and dollar-losers and **change over** to Autopulse, the pump that cost-smart operators are adopting.



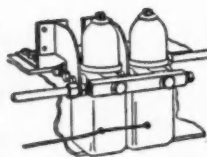
**ENDS VAPOR-LOCK:** Mounted in a cool spot away from the hot motor, it pushes cool fuel in a steady, bubble-free stream, temperature regardless.



**SAVES FUEL:** No longer does 10 to 15% of your fuel vaporize and waste itself out the carburetor vent: *cool pump location* prevents this big wastage.

### FOR ANY CAPACITY:

Single pumps for your light jobs, standard duplex models for heavy-haulers. Improve your equipment,



enhance your reputation for never-failing, on-time schedule holding. Standardize on Autopulse; save money on our *Change-Over*.

# AUTOPULSE

## ELECTRIC FUEL PUMP

**AUTOPULSE CORP., 2821 Brooklyn Ave., Detroit, Mich.**

## OCTANE

(CONTINUED FROM PAGE 25)

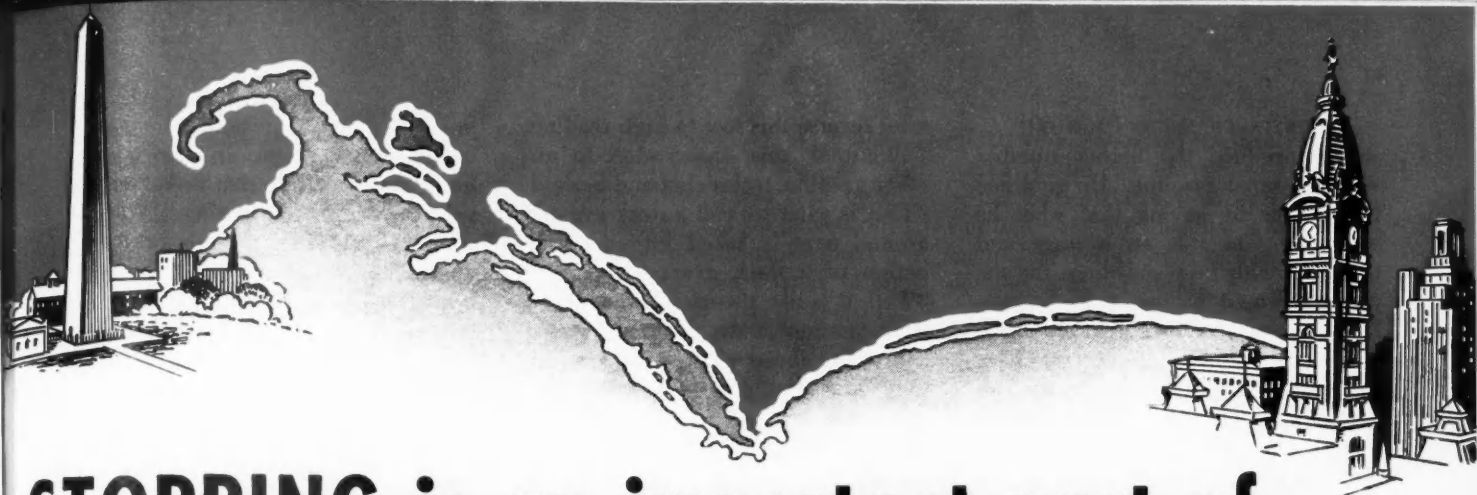
octane number which could be universally used for the service that the gasoline might encounter. In addition, the limitless number of engines and the indefinite number of conditions of load speed and temperature would make possible a test tailored to any operation. Thus it becomes necessary to use the Road Method on representative engines under conditions that the vehicle is most likely to encounter.

Since passenger cars outnumber trucks and account for the largest part of the gasoline consumed, the tests are made on passenger cars under relatively light load conditions for truck engines.

The only conclusion that can be drawn from all of this is that none of the methods tells you exactly what you want to know. This is said with a full knowledge that we as operators could not specify all conditions surrounding our operations which may affect gasoline performance if an oil company were willing to tailor an octane test to our service. Probably if it were possible for refiners to make octane tests for the different operations the operators would become suspicious of the jockeying around of octane numbers and besides the octane number would no longer be a measuring stick but rather it would be a tailored specification of no comparative value.

We asked a man long familiar with this octane business to tell us which of the three laboratory tests (those conducted in the laboratory engine) was the most optimistic in that it

(TURN TO PAGE 62, PLEASE)



# STOPPING is an important part of GOING on schedule



## Between Boston and Philadelphia

Traffic as thick as a London fog. A hundred or a thousand stops and partial stops. These are the daily dish of the men who drive U. S. Highway No. 1 between Boston and Philadelphia for the Adley Express Company of New Haven, Conn.

Stay behind the wheel with them on just one of these runs and you'll understand their enthusiasm for Thermoid Brake Linings. For Thermoid helps to make their huge trucks and cargoes responsive to control with a minimum of effort and a wide margin of safety.

Sit behind the desk of the fleet superintendent and you'll learn still another reason for their Thermoid enthusiasm. The Adley Express Company operates

130 semi-trailers . . . 75 tractors . . . 75 trucks. Their average monthly total is approximately 300,000 miles. Thermoid Brake Linings are helping to cut the costs of operation and maintenance over this mileage.

But as an even more practical invitation . . . let us make this suggestion. Pick out any unit in your fleet regardless of its size. Have your Thermoid jobber specify the proper type of Thermoid Brake Lining for the unit. Then let your drivers tell you how it performs and let your fleet superintendent chalk up its record for mileage and costs. It's ten to one you'll come to the same conclusion as leading fleet operators throughout the country . . . and specify Thermoid for your whole fleet.

# Thermoid

CUSTOM-BUILT BRAKE LINING SETS • CUSTOM BRAKE BLOCK SETS  
THERMO-BLOCKS FOR HEAVIEST DUTY

★ THERMOID COMPANY ★ *Trenton, New Jersey* ★



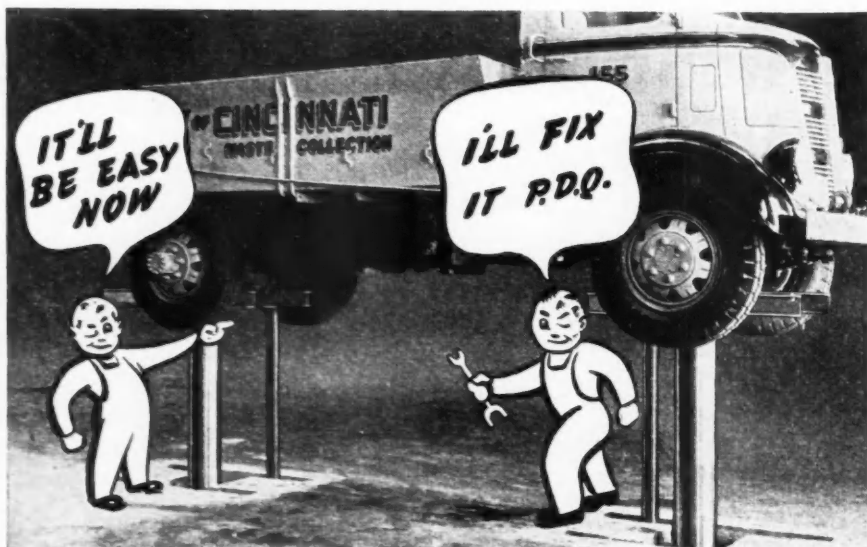
(CONTINUED FROM PAGE 60)  
would produce the higher number with the same gasoline. He qualified his answer by saying that what he was giving us was an average and that probably no gasoline in the country would follow these ratings. His answer was that if a gasoline rated 70 octane on the A.S.T.M. Method it might rate 71.5 on the L-3 Method and 74 on the Research Method. He dwelt on the fact that this was an average and that it was possible that some gasoline might

even reverse this low to high reading.

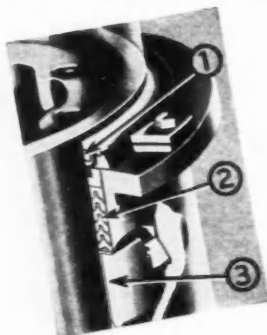
We took this observation to another gasoline technician and he said, "That is what we call a duck average around here." Asked for an explanation of a duck average, he said, "Well, it is like theorizing that if you want to shoot a duck and you shoot one bullet ahead of him and one behind him that on the average you will shoot the duck."

The point he was making was that in his experience you cannot tell anything about how any gasoline is

going to perform in the various tests until you make them. In other words, he does not believe that any one test will give a higher rating than the others consistently enough to single it out. In support of this, he permitted us to copy some results of tests that he had available which are given here simply to show how confusing the matter must be even to those well versed in the subject. The results given were obtained by testing well known makes of gasoline by the various methods.



## JOYCE LIFTS have What YOU Want!



(1) Water-tight wiper ring keeps piston lubricated, clean and dry.

(2) Chevron self-adjusting packing: self-sealing . . . no packing nut to tighten.

(3) Bronze guide bearing . . . no wobble . . . no stop shock on packing.

You can spot your trucks most quickly over a Joyce Two-Post Lift with Split Superstructure . . . no matter what length of wheelbase . . . nor whether it has offset differential.

You can also get at all underbody parts most easily . . . no matter whether it is a simple inspection job or dropping the drive shaft, transmission or pancake engine.

And in addition you get the finest possible construction of the jacking units: (1) a casting enclosing a grease groove and composition wiper ring, which lubricates and protects the piston. (2) seven layers of self-adjusting packing. (3) extra-long bronze guide bearing giving perfect stability.

Yes, Joyce Lifts have what YOU want for money-saving service. They are built with your requirements in mind . . . in all sizes and types and for air or electric operation. Why not write today for Bulletin No. 158.

THE JOYCE-CRIDLAND CO., Dayton, Ohio



# JOYCE LIFTS AND JACKS

	C.F.R.	
	A.S.T.M.	Road
Gasoline No. 1	72.9	72.6
Gasoline No. 2	73.7	76.9
Gasoline No. 3	77.1	73.7
	L-3	Road
Gasoline No. 4	72.5	72.6
Gasoline No. 5	74.8	76.9
Gasoline No. 6	77.9	73.7
	Research	Road
Gasoline No. 7	80.	79.9
Gasoline No. 8	74.5	75.5
Gasoline No. 9	79.	72.6

Another point we got out of our investigation was that of the laboratory methods the A.S.T.M. Method is probably the more accurate measuring procedure for performance in heavy engines operating at full throttle and full load, and that the Research Method probably shaded the others in rating performance in acceleration of light engines operating at relatively cool temperatures. This was offered as an opinion for what it was worth. It was not a definite conviction on anyone's part and there were no particularly good arguments marshaled in support of it.

Obviously, there are no definite conclusions to be drawn that will solve the fleet operator's problem. However, the following suggestions may be helpful.

1. Determine if you can, from experience, which test results give the best indication of what gasoline will do in your service.

2. Make all comparisons between gasolines with ratings from the same method.

3. Make sure of your maintenance, especially that part of it that may permit deposits to accumulate. Carbon deposits and spark timing must be closely controlled before blaming it on the gasoline.

### Carriers Must File 30-day Notice

Contract carriers of property by motor vehicle must give 30 days' notice to the ICC with regard to any changes in rate structure, according to a recent ICC order.

## FORUM

(CONTINUED FROM PAGE 33)

indicated that he had no trouble on that score at all.

E. W. Jahn, Consolidated Gas, Electric Light & Power Co., Baltimore, also was grateful to the manufacturers. His thought was that if the manufacturers would continue to deal with the politicians that operate the licensing bureaus in a satisfactory manner and not confuse the operator

any more than they do at present that they rated a vote of thanks. So far as he was concerned fleet operators were asking the manufacturers to do something impossible since it would always take more truck to do a job in Pittsburgh than it would to do the same job on the Eastern Shore of Maryland.

O. A. Axelson, Columbia Gas & Electric Corp., New York, was not willing to give up his quest of a uniform method of rating so easily. He said he believed that if sufficient

effort were put upon the problem a rating could be developed which would be satisfactory to everybody. Put to a vote, the idea that a uniform method of rating of trucks could be developed found almost no support.

T. C. Smith, American Telephone & Telegraph Co., closed the discussion of this subject by saying that if a truck were never used a uniform method of rating would be applicable but in actual use certain modifications depending upon service suggested themselves and only experience determined which modifications to use. Thus each fleet operator had a measuring stick which he understood best.

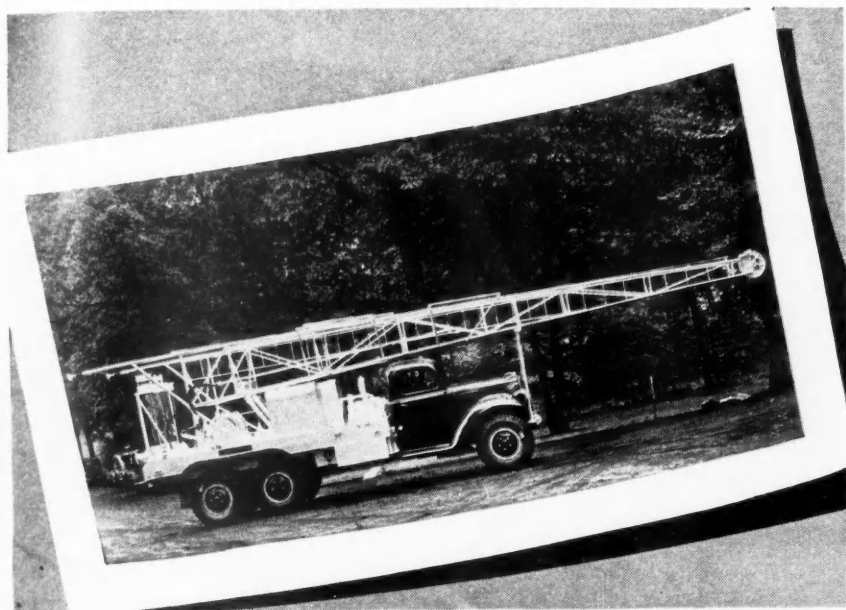
Capt. Axelson opened the discussion on the small, light car that would be rugged, easy to maintain and give 25 m.p.g. and at the same time have a low purchase price, by saying that if you analyzed the requirements of such a vehicle you would find that it is impossible to build. Further, Capt. Axelson stated that there could never be a specialized fleet car since fleet purchases are only a by-product of the general market and modifications from standard would cost the fleet operator money.

To this Ed Jahn, seated in a back row, added a loud "Amen!"

"K" Glynn contributed an interpretation of a recent speech by Alfred P. Sloan, chairman of the board, General Motors, which led him to believe that manufacturers had some faith in the smaller car for the general market, and that perhaps a smaller car minus some of the frills was in the making.

W. L. Shaffner, General Motors Sales Corp., warned that fleet sales represented only about 6 per cent of the market, so any car tailored to fleet specifications would increase the cost considerably. Added to this warning was the comment of a contributor identified to this reporter only by his surname, McGrath. Mr. McGrath said that one feature of the fleet car was that it would have fewer gadgets and frills and if a fleet had such a car it would have a hard time trading it off when it was finished with it. He cited as proof the fact that a look around used car lots would show that used cars are dolled up more than new ones, presumably to make them salable. Hence with a specialized fleet car, the fleets would have a used car problem.

(TURN TO PAGE 66, PLEASE)



## MIDLAND POWER BRAKES

**ARE Standard Equipment ON  
MARMON-HERRINGTON  
"ALL-WHEEL-DRIVE" TRUCKS**

One of the strong selling points of Marmon-Herrington "All-Wheel-Drive" trucks and tractors is their exceptional *economy*—especially on fuel and tire costs. It is only natural, then, that they should choose MIDLAND Power Brakes as standard equipment. Midland Power Brake equipment is as famous for its *low cost operation* as for its engineered efficiency.

Specify the power brakes that leading manufacturers depend upon. Ask your nearby Midland distributor today for complete details—or write direct to factory.

**THE MIDLAND STEEL PRODUCTS CO.**  
10605 MADISON AVENUE • CLEVELAND, OHIO  
Export Department: 38 Pearl St., New York City



**Those who  
KNOW power  
brakes choose  
MIDLAND**



(CONTINUED FROM PAGE 65)

Jean Ray called attention to the fact that there were some very low-priced cars on the market today and that he had not seen any rush of fleet operators to the showrooms of dealers handling these cars.

J. R. North, Commonwealth & Southern Corp., Jackson, Mich., gave some specifications of passenger cars now available. He said that the fleet operator had wheelbases from 102 in. to 112 in. to pick from, with engines from 134 cu. in. to 221 cu. in. giving

top speeds of 60 to 90 m.p.h. These cars weigh from 2200 lb. to 3000 lb. and cost from \$596 to \$725. Mr. North indicated that he was not going to lose any sleep over selection of passenger cars so long as that range of vehicles was available.

Mr. North also brought up the question of uniformity of the fleet. His experience led him to believe that employees did nothing to add to the life of cars that they did not like and if the cars were all alike or comparable that there was no reason for

employee abuse. Relative to extras, Mr. North said he could easily understand that with production methods it would even cost money to leave off some of the gadgets that fleet operators feel that they could live without.

Fred Henlein, Cincinnati Gas & Electric Co., said that the principal objection to modern passenger cars was that the increase in width in the last few years had reduced his garage capacity 20 per cent.

Chairman Jean Ray introduced the next topic, "maintenance control for scattered fleets," with the remark, "Heaven help the fleet that depended upon dealer maintenance," which gave a rough indication as to how he stood on farming out maintenance work. Henry Jennings, technical editor of COMMERCIAL CAR JOURNAL, outlined a budget used by a fleet that had vehicles in 13 locations in which the weekly maintenance cost was governed by the amount each vehicle represented as a capital investment on the books. Outside labor and parts were regulated by age while fleet labor was set at \$2 per week plus a handicap allowance which was determined by the condition of the roads over which the vehicles operate. Tire allowance was divided into those going less than 300 miles per week and those going over 300 miles per week. Gasoline consumption was based on a sliding scale of improvement.

Jack North reported that his company preferred to do its own work, since it had found dealers' maintenance unreliable and, in addition, with various member companies doing their own work the parent company was able to pool good ideas that sprang from several locations with the result that costs were materially lowered.

John Orr disagreed with these findings so far as his operation was concerned, stating that he had no trouble with dealer maintenance and that he suspected that those that did had neglected to train dealers in exactly what the fleet required and then to supervise them in order to see that the fleet actually received what it ordered. At this point Chairman Ray put the question "Do you get satisfactory service from dealers?" to a vote and dealer maintenance suffered badly from lack of support.

Capt. Axelson provided some costs  
(TURN TO PAGE 68, PLEASE)



**G**IVE any good oil filter a radiator shutter for an anchor man and the tug-of-war decision will go to them every time.

A Radiator Shutter provides four advantages you can't get any other way.

- |                                                                                                                                                                               |                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1</b> Permits oil to heat quickly, insures free circulation through the filter.</p> <p><b>2</b> Practically eliminates oil-water sludge, prevents clogging filters.</p> | <p><b>3</b> Reduces dilution — prevents washing dirt through filters.</p> <p><b>4</b> Shields crankcase—keeps oil at proper temperature for best lubrication.</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Eleven prominent truck manufacturers have recognized the importance of radiator shutters by approving them for factory installation on current models.

Why not have several of your new trucks come with Pines Radiator Shutters now? By Fall you will have sufficient evidence of their value so that you can meet next Winter's problems with the knowledge that you are well prepared.

Write us for complete information on radiator shutters either thermostatically or manually controlled.

## **PINES WINTERFRONT COMPANY**

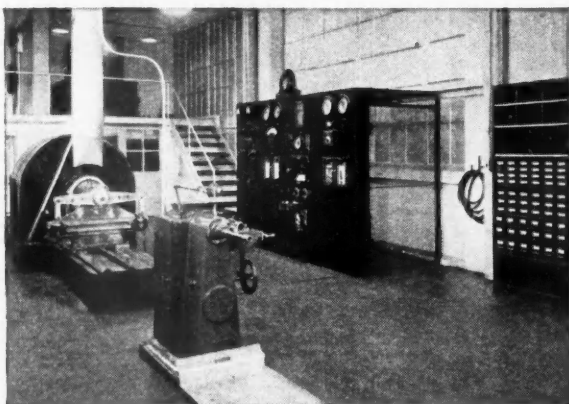
Cicero & Division, Chicago, Ill.

Suite 378, 11 W. 42nd St., New York • 544 New Center Bldg., Detroit



# You Don't Need to Experiment When you use **CoMaX** Brake Lining

**WAGNER maintains 26 Proving Grounds, and  
YOU get the benefit of this valuable experience**

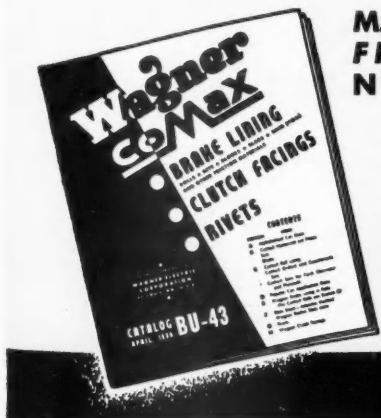


*Illustration above shows one view of the Wagner Brake Service Testing Laboratory in St. Louis. Completely described in Bulletin HU-10.*



## MAIL COUPON for FREE COPY of NEW CATALOG

Don't delay! Ask for a copy of the big new Wagner CoMaX Brake Lining Catalog BU43. It is unusually complete, gives specifications, prices, etc., for trucks, buses and passenger cars. It's FREE, so ask for a copy NOW!



Wagner knows brakes!—As manufacturer of Lockheed Hydraulic Brakes, Wagner has a valuable background of experience in braking problems. Wagner is well equipped to know the type of lining a brake should have—and this knowledge is reflected in CoMaX specifications.

Wagner interest does not stop with the manufacture of brakes or with the sale of CoMaX. Realizing the value of a "never-ending" first-hand study of all braking problems, the Wagner Brake Testing Laboratory was built in St. Louis. Tests made in this great scientific laboratory are supplemented by handling actual service jobs in the model service departments of 25 strategically located Wagner branches, a total of 26 Wagner Proving Grounds.

## SPECIFY CoMaX ON YOUR NEXT ORDER

CoMaX brake lining is ideal for quick, safe, smooth stops—It is long-lived . . . has reinforced backing . . . is non-compressible . . . uniform in texture . . . easy on drums . . . ideal for high speeds . . . quiet . . . smooth . . . age proof.

Available in slabs, blocks, rolls and sets.

AUTOMOTIVE PARTS DIVISION

B40-4 CCJ

## Wagner Electric Corporation

6400 Plymouth Avenue, Saint Louis, Mo., U.S.A.

Gentlemen:

Send me complete information on Wagner CoMaX Brake Lining and my free copy of the new Catalog BU43.

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

My Jobber is \_\_\_\_\_

(CONTINUED FROM PAGE 66)

which showed that it cost less to let dealers maintain some of his company's fleets than it did to maintain some others in fleet shops but that the operations were not comparable.

Jean Ray brought up the point that while dealers were willing to make good on work that had to be done over when complaints arose, the time lost by the vehicle was costly although it did not show up in the maintenance records.

Merrill Horine provided some bal-

ance for the discussion when he said that most fleets probably needed some of both kinds of maintenance. His point was that if a fleet shop was manned for peak loads, it would certainly have a high overhead for average conditions. Fred Faulkner agreed with the idea that trying to cut a pattern entirely from one type or the other was a mistake because most fleets require some of each. His outside service is supervised by traveling supervisors.

And so on to inaccessibility of

parts for maintenance. Henry Jennings read some figures from a time study based on 15 frequently executed shop operations which showed that the time required for these operations was between 25 per cent and 33 1/3 per cent higher in 1939 than it was for the same cars in 1930. Merrill Horine countered with the statement that if a manufacturer built a truck like a mechanic wanted it that no one would buy it. In addition it would be more complicated and would cost more.

Fred Faulkner challenged this statement. He did not believe that any vehicle would be more complicated because it was accessible, rather it would be less complicated and that accessibility had nothing to do with cost.

Austin Wolf concluded the session by drawing attention to the fact that while vehicles may be more inaccessible than they once were that the use of instruments makes possible less frequent attention and better attention when necessary.

The afternoon session consisted of an inspection trip through the Gulf Oil Co. laboratories. Any operator who made the trip with his eyes open could not help but have more respect for the oil industry by the time he got back to Pittsburgh.

Before the tour R. J. S. Piggott, Gulf Research & Development Co., gave a short talk on gasoline economy. Mr. Piggott brought out, first, that spark timing and mixture adjustment were more important to gasoline economy than any variable quality to be found among gasolines from reputable refiners. Further along in his remarks Mr. Piggott lamented the fact that ignition units did not seem to be getting much better.

While too lean a mixture is no economy because it results in burned valve seats, according to Mr. Piggott, too many operators adjust their idle mixtures to give a smooth idle when possibly by sacrificing some smoothness they could operate on a leaner idle and save some gasoline. Impact losses due to unnecessarily sharp kinks in intake manifolds is another handicap to gasoline economy. Internal friction in manifolds is not as important as the impact losses despite popular opinion to the contrary. Mr. Piggott recommended some of the degassers but advised a careful investigation before deciding which

(TURN TO PAGE 70, PLEASE)

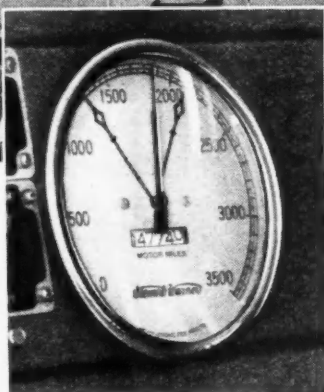
## STEWART-WARNER MOTOR MILE TACHOMETERS *REDUCE OUR OPERATING COSTS—HELP DRIVERS BY ELIMINATING GUESSWORK—ASSIST IN DETERMINING SERVICE PERIODS!*



**Los Angeles-Albuquerque Express  
Covers Two Million Miles a Year  
Over All Types of Roads and Grades**

"We operate 53 pieces of equipment over the Los Angeles-Albuquerque-Denver run, a distance of 1350 miles, or a total of more than 2,000,000 miles per year. We encounter all types of roads and grades, including one elevation of 7400 feet and another of 7900 feet.

"The use of Stewart-Warner Motor Mile Tachometers on this equipment has reduced our operating costs by giving our drivers an indicator to tell them what the engine is doing at all times. Drivers say the red pointers on the dial assist materially in their driving and permit them to relax because it eliminates guesswork as to whether the motor is lugging or over-



This close-up of an actual Motor Mile Tachometer installation on one of the Los Angeles-Albuquerque trucks plainly shows the two red pointers which indicate maximum and minimum efficient engine speeds, eliminating guesswork for driver.

speeding. They also say the tachometer is a great help in gear shifting:

"The motor mile feature also assists us in determining the proper service periods as our motors operate considerably in excess of the miles shown on the speedometer."

G. C. Lebeck, Los Angeles-Albuquerque Express

## STEWART WARNER MOTOR MILE TACHOMETER

STEWART-WARNER CORPORATION  
1876 Diversey Parkway • Chicago, Ill.

STEWART-WARNER CORPORATION  
1876 Diversey Parkway, Chicago, Ill., Dept. E  
I am operating . . . trucks. Please tell me all about  
the Stewart-Warner Motor Mile Tachometer.

Name.....

Address.....

City.....State.....

Firm Name.....

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL  
MAY, 1940



**"Weight O.K."**

YET, WHEN YOU ROLL ON  
THE SCALES WITH AN  
**AEROVAN**  
YOU'RE HAULING  
*Extra Payload*

"The one thing I had not expected is the real relief in rolling over the scales with that extra payload that it is impossible to carry in anything but the Aerovan, and have them flash the "Weight O. K." sign at me," writes Mr. L. E. Thompson, an owner-driver of Chicago.

YES, it must be quite an agreeable feeling, Mr. Thompson, and all you other thousands of drivers of Fruehauf Aerovans, when you roll on the scales and have the "Weight O.K." signal flashed. You probably know pretty well beforehand that you are not carrying an overload—thanks to your employer, or to yourself if you are an owner-driver. You, or your employer, had the foresight to select a modern Fruehauf Aerovan, the "light-with-strength" Trailer that reduces gross weight 1500 pounds or more.

The Aerovan is engineered to meet the need for greater payload capacity. It adds to income without adding to operating costs, since the gross load remains the same. It cuts fuel costs when running light. And it lowers license costs where weight is the governing factor.

The Aerovan is of modern "airplane" type design. Its frame-integral, tubular-strut construction combines extremely light weight with exceptional strength, which actually reduces weight as much as 4,000 pounds, when compared with many Trailers on the road today.

Oldest and Largest Manufacturers of Truck-Trailers  
**FRUEHAUF TRAILER COMPANY • DETROIT**  
Sales and Service In Principal Cities

**... BIG SAVINGS WITH  
DIFFERENTIAL DUAL WHEELS**

"I believe these new Differential Dual Wheels pay for themselves in a short time in tires alone, and I know the tractor handles the load a lot better."—Frank E. Mick, Sidney, Neb.



**FRUEHAUF TRAILERS**



*"Engineered  
Transportation"*

REG. U. S. PAT. OFF.

MORE FRUEHAUF TRAILERS ON THE ROAD THAN ANY OTHER MAKE



(CONTINUED FROM PAGE 68)  
ones were good. Automatic chokes are no good in Mr. Piggott's book.

Oil coolers were predicted as standard equipment if horsepower continue to climb without adding to the capacity of the oil pan. The oil pan has already become an engine cooler and increase in this function will demand the addition of an oil cooler. Mr. Piggott warned against the use of too light an oil because the reduction in viscosity reduces bearing capacity and contributes to sludge for-

mation. Mr. Piggott also suggested that fleet operators could look for continued growth in the use of dopes in the oil.

At the transportation dinner John Orr acted as toastmaster and introduced P. H. McCance, vice-president, The Philadelphia Co., who in the speech of the evening called attention to the need for locating a source of new fleet personnel. One of his suggestions was to take full advantage of trade schools. Progress in fleet operation, Mr. McCance thought,

would be dependent upon greater skill of employees which would require careful selection through tests and training and re-training after employees are on the payroll. Obtaining and applying a measuring stick for individuals in equitable fashion was the best defense against union seniority which sometimes results in badly placed employees.

The first session of the second day was devoted to a paper by Randolph Whitfield which is abstracted elsewhere in this issue. In discussing the paper, Ed Jahn said that he favored pooling of cars as did Mr. Whitfield but that somehow it never worked out as well as it seemed to on paper. Relative to that part of Mr. Whitfield's paper that had to do with selection and purchase, Mr. Jahn said that availability for immediate delivery frequently influenced the purchase policy and that he did not stick to one make of car because a certain amount of reciprocity was necessary. As for averaging cost of operation by makes, Mr. Jahn thought that at least 10 vehicles of any given make were necessary to arrive at an average and even then he did not trust the average too far.

Mr. Jahn found that contrary to Mr. Whitfield's experience throttle stops interfered with carburetion and that drivers could beat them. In his fleet he has found that it is necessary to weigh line trucks every 60 days because they become traveling store-rooms and get too heavy.

F. K. Glynn did not agree with Mr. Whitfield's premise that a light truck could be reinforced in the necessary spots to do heavy truck work providing the mileage was low. Mr. Glynn's experience had been that by the time the modifications were complete that the trucks so treated cost about as much as a manufactured heavy truck and that their operation was not as satisfactory. Relative to pool cars, Mr. Glynn made the point that reserved time on a pool car must be paid for by the department reserving it whether the car is used or not.

Capt. Axelson observed relative to the fast trade-in practiced by Mr. Whitfield's company that the people least able to spend money on cars live with the cars that fleet operators trade off as having no more economical transportation left in them.

The next session was divided into two parts. In an open meeting D. M. (TURN TO PAGE 72, PLEASE)



Knowing how to get the right rear axle for a truck is just as important as knowing how to pick the right engine and wheelbase... When you buy trucks with Timken 3-for-1 Axles, your job of getting the right axle is simplified. For the Timken 3-for-1 rear axle housing takes any

one of three final drives—Bevel, Double Reduction or 2-Speed Double Reduction. Each is available in a wide range of ratios. All three final drives are interchangeable... Specify Timken 3-for-1 Axles and you take a major step in fitting a truck to your job—to any job.

## TIMKEN AXLES

The Timken-Detroit Axle Company • Detroit, Mich.  
Wisconsin Axle Division • Oshkosh, Wisconsin



*Yes, It's True,  
Thanks to You,*

### MR. FLEET OPERATOR!!

Ever since the DELUXE Oil Filter was introduced the facilities of the DELUXE Products Corporation have been taxed to the utmost to meet the ever increasing demand from fleet, truck, bus, transit and cab operators. Now with most Filter-Equipped Fleets Using DELUXE Filters . . . and with the completion of increased manufacturing facilities . . . DELUXE is ready to bring the story of the Filter *that really is a Filter* to the Car Owner. Announcement will be made this month in the Nation's leading automotive magazines . . . and, inasmuch as all this has been made possible by your continued use of DELUXE Oil Filters and Cartridges, we want to take this opportunity to thank you.

## WHY DOESN'T MY HUSBAND TELL ME THESE THINGS?

Imagine ME . . . the wife of a fleet operator . . . having to learn from a SERVICE STATION MAN that DELUXE FILTERS are NOW AVAILABLE FOR PASSENGER CARS! And what do you suppose my husband said when I told him about it? Said he wasn't surprised!

"We're using 'em all the time since we found them to give *us the lowest per mile oil cost we've ever experienced!* That's why most Fleets have adopted DELUXE!" "Good Thing," he said!

"Good Thing," I SHRIEKED . . . "do you mean to stand there and tell me you've let me spend my good money on unnecessary oil changes and motor repairs for our family bus when you knew about DELUXE Oil Filters all the time?" I haven't seen him so flustered since the night he proposed!—He had a DELUXE installed today!



### More Fleet Operators Buy and Use DELUXE Filters Than Any Other Make...

There are plenty of reasons why A 30-DAY TRIAL DEMONSTRATION WILL CONVINCE YOU. Just write, the DELUXE PRODUCTS CORP., 1406 Lake St., La Porte, Indiana.



(CONTINUED FROM PAGE 70)

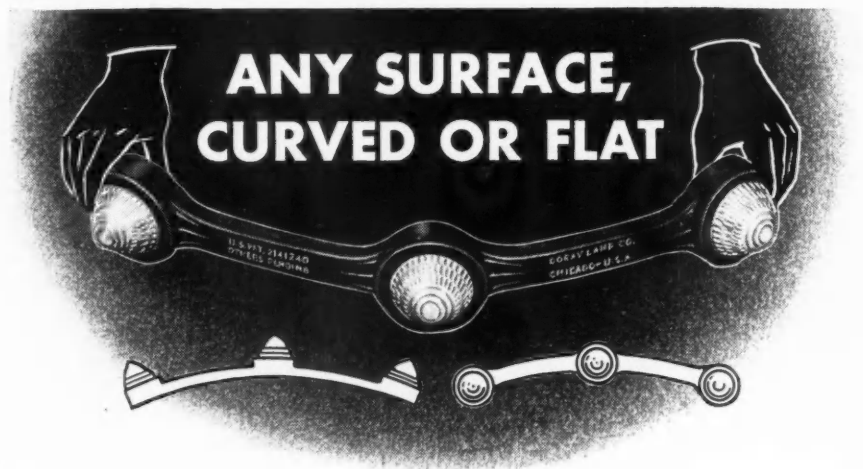
Baldwin, Motor Vehicle Dept., State of Virginia, spoke on "Motor Vehicle Inspection from the Standpoint of Safety," and Capt. Boate, Pennsylvania Motor Police, spoke on "State Motor Vehicle Inspection from the Standpoint of a Policeman." Concurrent with this session the closed "Public Utility Fleet Operators' Conference" went its informal way discussing the problems of operating a utility fleet under the guidance of Jack North as chairman. Some por-

tions of this meeting can be reported and that part of the material which does not violate confidence will be given in the next issue of COMMERCIAL CAR JOURNAL.

#### Experienced Fleetman Available

A man whose experience includes three years as assistant to the superintendent of a large fleet, four years as fleet safety engineer, two years of selling to fleet accounts and who is now automotive engineer for a large insurance company is available to take charge of fleet operation, cost reduction or safety management anywhere in the U. S. If interested write the editor.

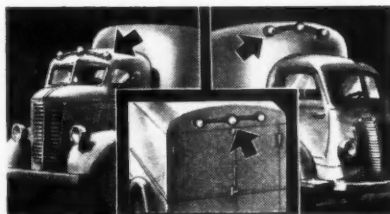
## LIGHT UP



### It's Easy with this Flexible 3-Way Light

- Water-Proof
- Dust-Proof
- Shock-Proof
- FLEXIBLE

New molded rubber unit for trucks and buses has contact strips and body molded into one piece—nothing to rust. 2½" Do-Ray lenses. Designed for front or top mounting. List (No. 1132R) \$2.50.



FLEXIBLE—FITS ALL CURVED AND FLAT SURFACES



### Safe, Sure Reflection with "Nobby" with Flexible Bracket

The flexible mounting permits this device to swing with an impact, thereby reducing the chances of damage. Made for installation on trucks, buses, or trailers. Reflector far exceeds requirements set up by S. A. E., E. I. S., and I. C. C. Frame diameter, 4⅞" overall. Furnished in red, amber, green, or white. List (No. 1292-F) \$1.25.

Ask your jobber  
or write

# DO-RAY

### SAFETY LIGHTING AND REFLECTING DEVICES

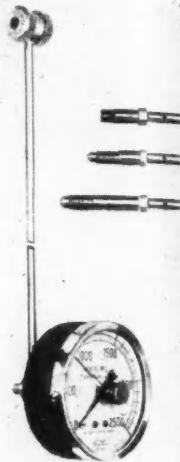
DO-RAY LAMP COMPANY 1458 S. Michigan Ave., Chicago

## NEW PRODUCTS

(CONTINUED FROM PAGE 44)

### Vickers Line Pressure Gage

The Vickers hydraulic line pressure gage was especially designed for the repair and maintenance of hydraulic brakes. Trouble and defects can be easily detected with it, especially on hydraulic systems with power equipment. The gage can be easily and quickly attached or removed from the wheel-cylinder connection. It will not leak or blow off, as balanced pressure holds it in place. The copper tube connection prevents swelling under pressure, thus giving accurate foot-pedal clearances.



A finger-operated check valve instantly bleeds the gage line. The secondary friction hand stays in place at the highest pressure reading, thus enabling one man to operate and read the gage. Capacity of the gage is 2500 lb. and it has a 4-inch dial with an unbreakable crystal. All metal parts are finished in chrome, and it is furnished with three universal attaching fittings. For further details address: Vickers Power Brake Co., 2421 N. Broad St., Philadelphia, Pa.

### Burn-Out Proof Signal Switch

A new directional signal switch is guaranteed to be burn-out proof no matter how long the signals stay lit, is offered by Signal Stat Corp., 59 Pearl St., Brooklyn, N. Y. The new switch may be installed with any make of directional signal and only a bulb change is needed to convert



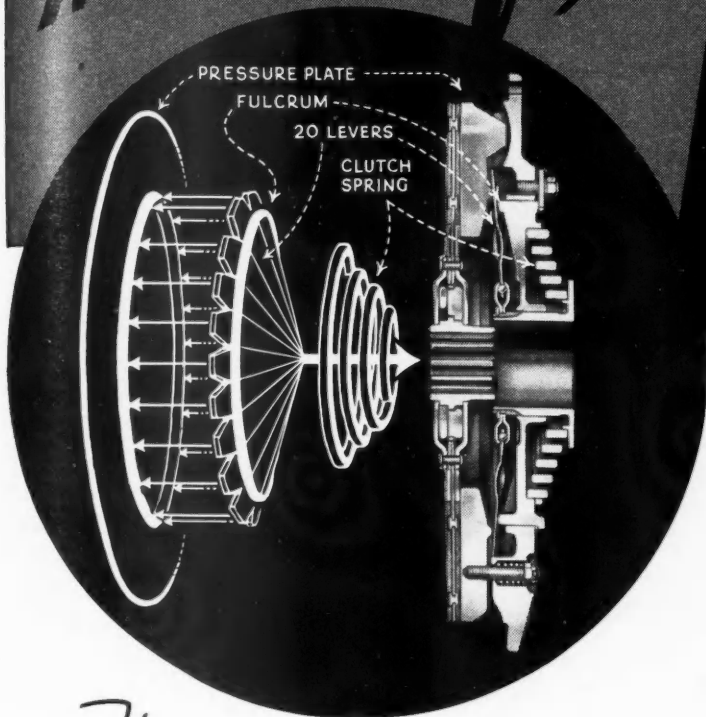
from 6 to 12 volt systems. Separate pilot lights are provided for front and rear signals. Front pilot still operates even though trailer be disconnected.

### Tail Pipes Easily Shaped

A bendable tail pipe, constructed of a single piece of convoluted flexible alloy-steel tubing, is the newest product of the Everhot Products Co., 2055 W. Carroll Ave., Chicago. The non-spiral corrugations permit easy bending by hand, as well as providing a radiating space three times as great as that of plain tubing of the same diameter. There are no interlocking, lapping or spiral seams, joints or segments to break or come apart. The new line, which includes nine sizes, will provide replacements for 95 per cent of all vehicles.



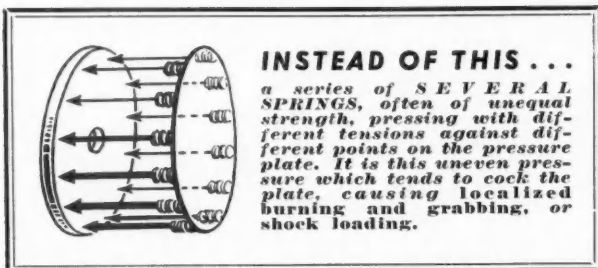
# This MECHANICALLY-EQUALIZED Pressure in



**LIPE**  
HEAVY-DUTY  
Clutches

- 1—eliminates shock loading**
- 2—lengthens clutch life**
- 3—reduces drive-line repairs**

*This...* the pressure of **ONE SPRING** equally divided and distributed all around the plate by 20 equally spaced pressure levers.



**Used by 85% of the  
Country's truck  
manufacturers,  
including Mack.**

**I**T isn't the number of miles a clutch operates that measures its life... it's the number of engagements it can take without grabbing or burning out. It's the frequency of clutch overhaul that tells the true story of clutch service... plus the number of parts that must be replaced in the driveline; such as, transmission bearings, universal joints, ring and pinion gears, shaft keys and rear axles.

Failure in most of these parts can be traced to shock loading of the clutch. And shock loadings are sure to occur when *clutch friction surfaces are not parallel*.

Lipe's sturdy clutch housing and no-warp pressure plate... plus **LIPE MECHANICAL EQUALIZATION OF PLATE PRESSURE**—rule out cocked plates, grabbing and shock loadings. Just glance at the diagram—see how the 20 pressure levers equalize the pressure, assuring parallel plate alignment and parallel plate contact. That's why Lipe Heavy Duty Clutches give a longer, lower-cost life.

Find out what Lipe Clutches will do for you. Write today for a free copy of the new Lipe Clutch Maintenance Manual.



**W.C. LIPE, INC. Syracuse, N.Y.**

# Free BOOKLETS PAMPHLETS CATALOGS

## books

... a special selection made by the editors ... to get your copy, just check the letter on the post card between pages 88 and 89 which corresponds with the item you desire and mail to Commercial Car Journal, Philadelphia.

### "Dodge and Diesel"

Completely revised and containing graphic new illustrations, the 1940 edition of "Dodge and Diesel" is just off the press. Dedicated to the attainment of greater efficiency and economy in the operation of heavy-duty trucks, the booklet revealed for the first time an increase in the power and torque rating of current production Dodge-Diesel engines. Brake horsepower at the governed speed of 2600 r.p.m. has been increased from 95 to 100 and torque from 226 to 240 pounds feet at 1200 to 1300 r.p.m.

Written by Dodge-Diesel engineers in collaboration with sales executives, the

"Dodge and Diesel" booklet is devoted to an explanation of Diesel engines in general and the Dodge Job-Rated Diesel in particular. All technical points of Diesel design and construction are described in simple language. The booklet is available by checking "A" on the postcard.

### Federal-Mogul Bearing Details

Produced in entirely new form, the new Federal-Mogul catalog, now in one volume, lists 857 additional new bearing numbers. One listing gives complete information for any make or model of car, truck, tractor or marine engine, for Federal-Mogul's line of connecting rod bearings, crankshaft bearings, camshaft bearings, connecting rods, bolts and nuts, piston pin bushings and shims. A new item included in this catalog is brass brake shoe shims, for obtaining correct fit after brake drums are reground and new linings installed. Get your copy by checking "B" on the postcard.

### Double Strength Steel

Republic Steel Corp. announces a new two-color, 40-page catalog on Republic Double Strength Steel, a high tensile, low alloy product. The book should prove helpful to all designers, engineers and fabricators interested in the use of high tensile, low alloy steel. Just check "C" on the postcard for your copy.

### Condensed Imperial Catalog

Up-to-the-minute data on flexible fuel line replacements for passenger cars, as well as many new items and price changes, are included in the new condensed automotive catalog, just been issued by The Imperial Brass Mfg. Co. Described in the catalog are all types of copper tube fittings, shut-off cocks, drain cocks, flexible fuel lines, choke controls, air nozzles, radiator water faucets, barrel faucets, tube working tools, battery testers, freeze-testers and many other items.

A copy may be had by checking "D" on the postcard.

### Budd Dual Wheels

The 1940 edition of the Budd Dual Wheel Catalog is now available. It contains complete information on Budd single and dual wheels, their construction, and application under various conditions with various tire sizes. The primary purpose of this book is to help in selecting new equipment, servicing and replacing of old and changing over tire and wheel equipment. It is especially valuable to maintenance superintendents, fleet operators and tire men. You can get it by checking "E" on the postcard.

### Flour City Brushes

You can find out all you need to know about any kind of brushes by looking in the 88-page, 1940 catalog of the Flour City Brush Co. It gives specifications, description and prices. Your copy will be sent if you check "F" on the postcard.



● Whether it's a muffler check-up, a universal overhaul, or a lubricating job ... you can do the job quicker, do it better and at lower cost, with the Kellogg Portable One-End Lift. The Kellogg operates on air alone ... wheels easily from job to job ... and lifts either end of cars or light trucks to convenient working heights, anywhere an air hose reaches. Portable ramps for rear wheels protect fenders, tailpipes, etc., from accidental contact with floor. There are dozens of ways it can speed up and increase maintenance efficiency ... and its price is so low there's no reason to do without it ... Write for details.

THIS ONE-END LIFT  
**Wheels**  
TO ANY JOB YOU'VE GOT

*The Hardie-Kellogg High Pressure Car Washer, also pictured above, does a better job in less time, with less labor and material. Naturally, it saves money where equipment must be kept in service and time for washing is limited. A range of sizes to fit the needs of large and small fleets. Write for complete information.*

**KELLOGG** DIVISION OF THE AMERICAN BRAKE SHOE AND FOUNDRY COMPANY, ROCHESTER, N. Y.

Sales Offices: 332 South Michigan Avenue, Chicago, Illinois; 230 Park Avenue, New York, N. Y.; 3355 East Slauson Avenue, Los Angeles, California; 4785 First Avenue, South, Seattle, Washington; Niagara Falls, Ontario, Canada

# KELLOGG

AIR COMPRESSORS  
LIFTS  
CAR WASHERS

When writing to advertisers please mention Commercial Car Journal

COMMERCIAL CAR JOURNAL  
MAY, 1940

**Your Dollar Buys  
More Profitable Miles  
IN ...**

**TRAILMOBILE**

## TRAILERS

Long usefulness, of course,—many years of constant service that comes from a trailer that is correctly designed and durably constructed to stand the gaff of the hardest runs under heaviest loads. And every ton-mile on a Trailmobile can show you a profit because there's no drag to need extra fuel — no breakdowns to eat up profits in expensive repairs. For profitable freighting operation, get the facts of Trailmobile.



**THE TRAILER COMPANY OF AMERICA, CINCINNATI, OHIO**

New York, Cleveland, Chicago, Oakland — sales and service agencies in every prominent marketing center.



## TRUCKS OVERPAY

(CONTINUED FROM PAGE 20)

of the railroads inclined to be generous in spots.

For instance, in computing payments made by highway users toward the cost of roads, the report eliminates from consideration Federal excise taxes on gasoline, oil, motor vehicles, etc., as being taxes for the support of the general functions of government. Deducted also was an estimated amount of personal property taxes included in registration fees. Deducted also from motor vehicle taxes were so-called "legal diversions." This includes, for example, the constitutional provision in Texas that 25 per cent of all excise taxes shall go to education, and the levy by Ohio and other states of one-half to one cent per gallon on gasoline for purposes other than highways. The report contends that the taxes in such cases were levied for these other purposes, and therefore should not be included in highway cost payments. And these "legal diversions" amounted to \$347,490,000 in the period from 1921 to 1937.

It is after making such and other adjustments that the report finds that in the period 1921 to 1932 highway user payments exceeded assignable costs by \$108,400,000, and in 1933 to 1937 by \$276,961,000 or by a total of \$385,361,000 in the entire period 1921-1937.

Highway users certainly will look upon this net adjusted figure of \$385,361,000 as a conservative computation of their overpayments. They will contend that the overpayments actually amounted to \$501,138,000, the figure named in the report before making of adjustments.

The generosity toward the railroads occurs in the conclusion that the significance of the early public aids to the railroads many years ago has largely disappeared, by reason of the many changes in the ownership of railroad properties which have since taken place through bankruptcies and receiverships, and otherwise. Even Mr. Eastman is not wholly in accord with the conclusion. "The reasoning on this point is quite involved," he says. "It seems sound to me, but I have not been able to dispel some lingering doubts."

But there is little to complain of in generosity of this sort. The significant fact is that the report found that public aids to the railroads from their inception to 1936 amounted to the stupendous sum of \$1,443,000,000. Federal, state and local land and right-of-way grants represented a large portion of this total. It was estimated that the public lands donated to the railroads were equal to about 91½ per cent of the area of the continental United States.

While the report generously argues that the benefits of those early aids have disappeared, it makes clear the fact that on a current basis the railroads are enjoying millions in subsidies while the highway users are being taken for millions in overpayments. The railroads, for example, in 1936 received a subsidy of \$35,635,000, made up largely of R.F.C. and P.W.A. loans. The highway users in 1937 overpaid their way by \$110,722,000.

The subsidy report is considerably less than generous toward the railroads in its appraisal of their thesis that highways should be considered as public utilities and that costs should be computed accordingly. This theory was set forth in and was the basis of a study of "Highway Costs and Motor Vehicles payments made by Messrs. Breed, Older and Downs. The railroads publicized this study nationally and used it as the basis for a vicious propaganda attack on trucks in particular.

In that study, to which the Federal Coordinator's presentation properly refers as the "railroad report," Messrs. Breed, Older and Downs alleged that a subsidy of 10 billion dollars was enjoyed by motor vehicles as a whole for the 12-year period 1921-1932. The authors built up this huge subsidy with the help of their public utility theory. Under this theory—which had never previously been used in connection with highway costs—there were added to legitimate costs such fictitious items as interest on the money invested in highways, taxes on the highways themselves as property, and interest on money made available during the period of construction. In other words, a double payment of interest, a payment of interest on interest, and taxation of a property which belongs to the public as a whole as much as the White House, the State Capitol,

the City Hall, the County Jail and the Public Library, none of which is taxed.

Referring to the total difference of slightly more than four billion dollars in the amortization charges given in the two reports, the Federal Coordinator's report attributes this to "marked overstatement by the authors of the railroad report of the early investment in rural roads, particularly county and local roads, from the failure to recognize salvage on certain types of road surfacing, and from the use of service lives for the various highway and street elements which are generally too short."

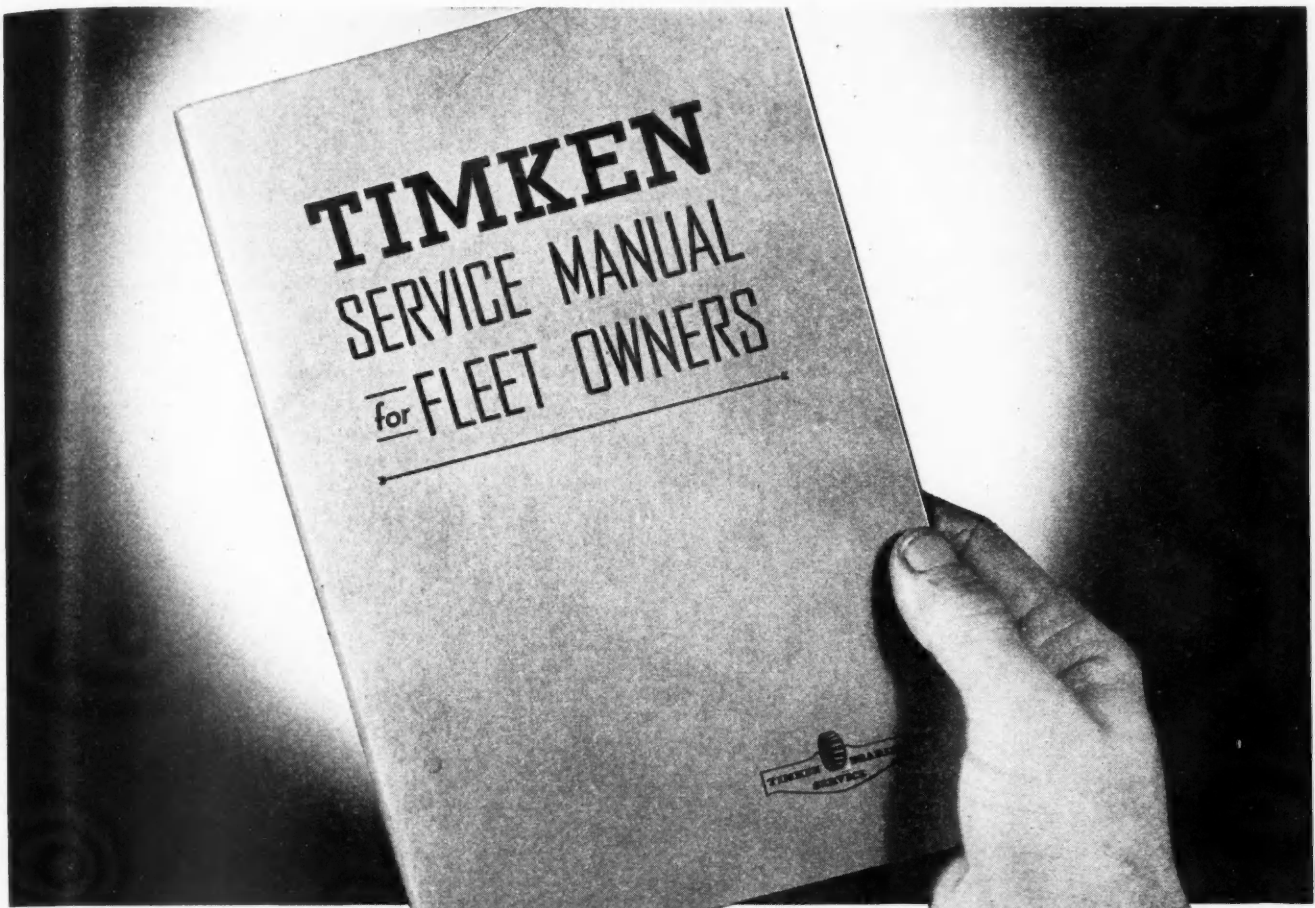
Total annual highway costs of \$31,120,214,000 are found in the railroad report for the period 1921-37; the corresponding costs developed in the Federal Coordinator's report aggregate \$25,519,089,000, a difference of \$5,601,125,000, or 22 per cent. A large part of this difference is explained by the inclusion in the railroad report of taxes on the investment in roadway facilities. This item amounts to \$2,202,448,000.

The Federal Coordinator's report rejects the inclusion of taxes in highway costs with this comment: "The fact that highway improvements have been financed by taxpayers and users appears to make a tax charge incongruous and to result in substantially a form of double taxation—for the provision of the facilities and for the privilege of using them." It accepts, however, the principle that highway costs should include an interest charge on unamortized balances. The interest rate charged is 4.25 per cent in the case of state highways and city streets, and 4.5 per cent in the case of county and local roads. In order to be consistent, the report allows highway vehicles a credit for their overpayments plus interest on those overpayments.

The railroad report's statement that "whenever studies have been made to allocate highway costs, the public utility concept has appeared and its principles have been followed," is termed "misleading and erroneous."

"The best test of the major conclusion of the railroad report is to ask whether it would have been possible to have raised \$10,000,000,000 of additional revenue (the subsidy figure given in the report) from

(TURN TO PAGE 78, PLEASE)



## DID YOU GET YOUR COPY?

The TIMKEN SERVICE MANUAL is a reference book prepared especially for fleet operators. Briefly—concisely written, it contains sufficient pertinent information to enable bus, truck, trailer and commercial car operators to maintain dependable bearing service at the lowest cost per mile.

Data is given on such subjects as mounting, adjustment and lubrication of TIMKEN Bearings at the points of hard service where they are so universally applied. Maintenance superintendents and their assistants have found this information extremely helpful.

If your organization has not received a copy of the Timken Reference Manual write us on your company's letterhead for one. It will be sent free of charge, of course.



**THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO**  
Service-sales Division

**TIMKEN**  
**TAPERED ROLLER BEARINGS**

(CONTINUED FROM PAGE 76)  
motor-vehicle users in the period 1921-32. The answer clearly is 'no.' In other words, roads and streets of the kind provided in this period could not have been afforded if their major purpose had been that of serving motor-vehicle operations and if motor-vehicle users had had to pay a much larger bill. The functions of these facilities were broader, as was their support. As application of the railroads' public utility concept therefore would have been self-

defeating, the concept itself lacks the validity ascribed to it."

So states the Federal Coordinator's report just before it seems to suppress a yawn and indulges in what seems to be an apology for the length of its 20-page critical analysis, thus: "Already, however, more consideration has been given the railroad report than it appears to merit."

In his foreword Mr. Eastman dismisses as "patently unsound" the railroad theory under which the

heavier vehicles would pay an extremely burdensome portion of road costs.

"The railroads," says Mr. Eastman on this subject, "have developed a theory which would assign a very heavy responsibility for the costs, and hence a like proportion of the annual assessments, to the heavier vehicles, including the commercial trucks and buses with which they compete. Very briefly and inadequately stated, the theory is that highways would still be constructed on the standards of width, curves, grades, and depth of pavement prevailing in the early period of modern road development, had it not been for the necessities created by these large, heavy vehicles, and therefore that the responsibility for all costs in excess of such standards must be assigned to such vehicles alone.

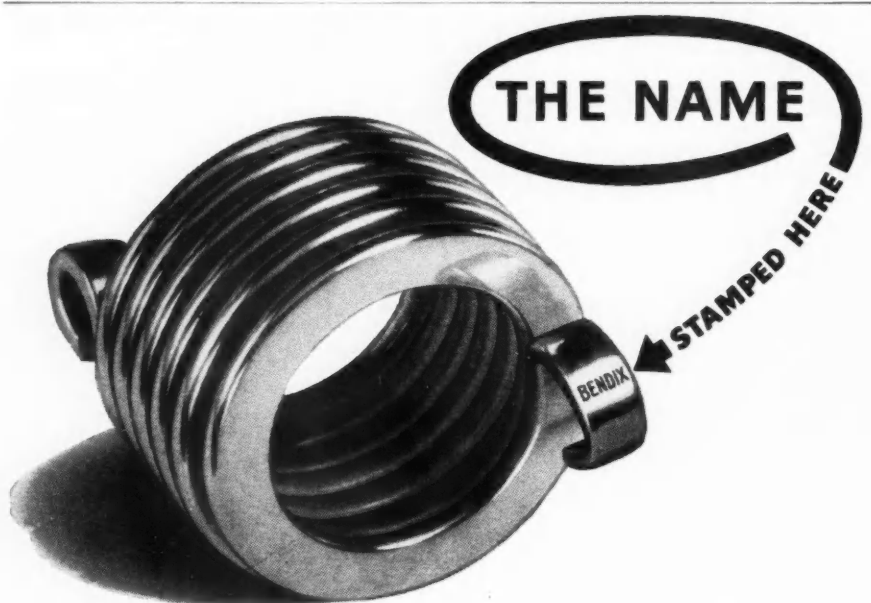
"Speaking from the standpoint of a mere lay observer who has had some opportunity to note the demands which private automobiles make upon modern highways and the standards which have been followed in the construction of some which are devoted to their use exclusively, this theory of the railroads seems to be patently unsound.

"I may add that the railroads have had the opportunity to express to me, both orally and in writing, their views on the highway carriers. Their contentions impress me as being carried to extreme limits."

In allocating costs to motor vehicles for their use of different types of roads and streets the Federal Coordinator's report carefully and painstakingly works out a percentage formula that gives full consideration to all important factors. The percentages assigned to motor vehicles as their share of annual highway costs compare with the percentages used in the railroad report as follows:

	F.C.	R.R.
State highways:		
1921-32	80.0	89.9
1933-37	83.0	90.6
County and local roads:		
1921-32	24.0	89.7
1933-37	34.0	90.6
City streets:		
1921-32	21.1	48.3
1933-37	30.0	48.1

"Use of the railroads' percent-  
(TURN TO PAGE 80, PLEASE)



## *Identifies the genuine* **BENDIX DRIVE SPRINGS**

Labor costs—not the small price of the spring—are what count when you replace a Bendix Drive Spring. That's why it's wise not to take chances with costly comebacks by putting in "just any old kind." Always install the *genuine* Bendix Drive Spring. After all Bendix has built some 60,000,000 Bendix Drives. And Bendix alone knows the precise steel formula, tension, temper, shape and dimensioning required.

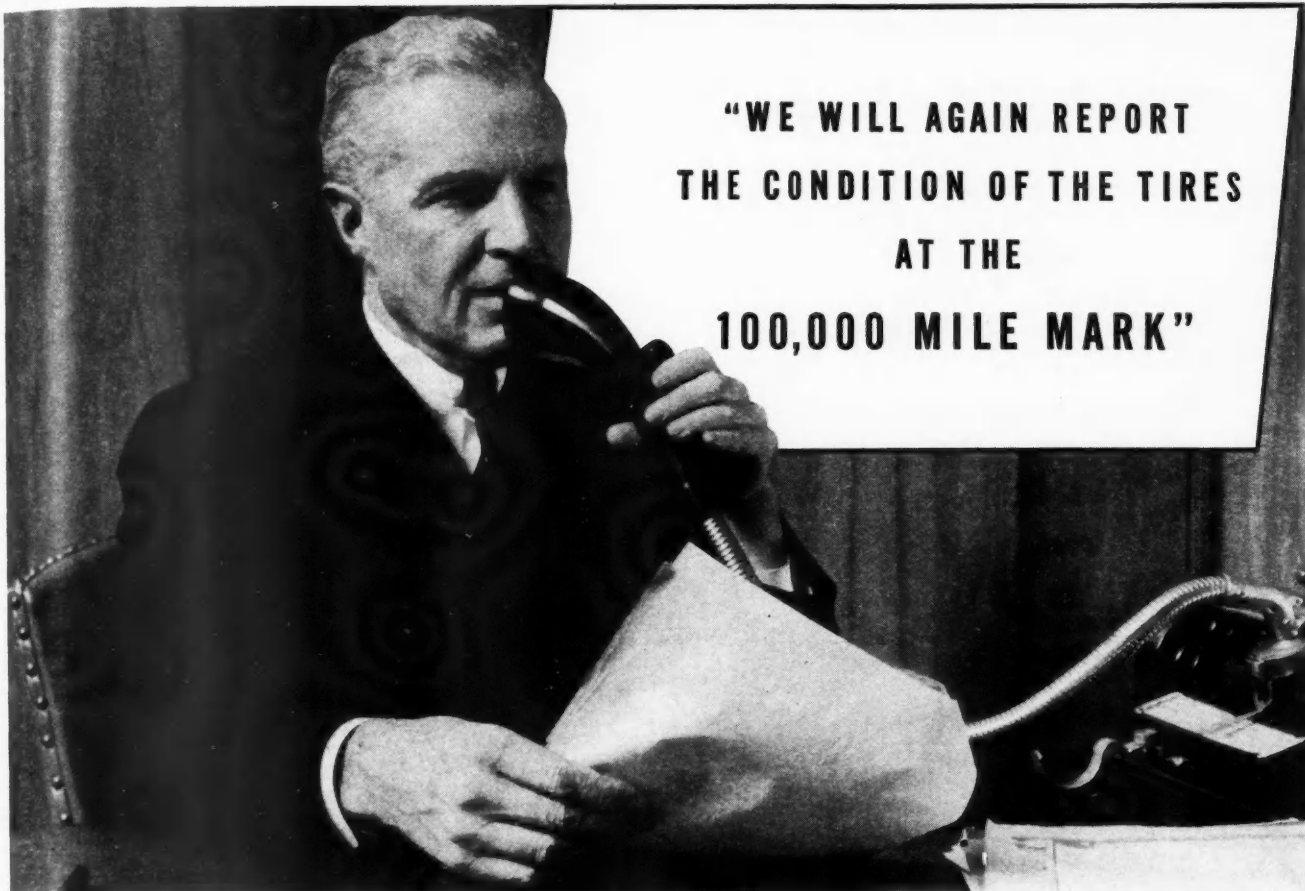
For your protection, every Bendix Drive Spring is plainly stamped with the name BENDIX. Look for it...always!



**ECLIPSE MACHINE  
DIVISION**

BENDIX AVIATION CORPORATION  
ELMIRA, NEW YORK





**"WE WILL AGAIN REPORT  
THE CONDITION OF THE TIRES  
AT THE  
100,000 MILE MARK"**

## **FLEET OWNERS TELL ACTUAL EXPERIENCES**

"These tires (all 8 of them) have covered 71,280 miles and their present condition indicates they will easily make another 40,000 miles."

"We will again report the condition of the tires at the 100,000 mile mark."

"We have solved one of our greatest problems—that of tires."

"The old trouble of blow-outs is no longer one of our worries."

"9.00-20 tires now in operation have delivered in the neighborhood of 100,000 miles."

"Blow-outs are practically a thing of the past on our trucks equipped with these tires."

"Our chief trouble in the past has been blow-outs caused by overheating, and we are now firmly convinced that the development of HR Cord has completely eliminated that cause of tire trouble."

"Can truthfully say that we are getting more mileage and less delays caused by tire failures than we ever believed could be built into truck tires."

"Two of these tires on large transport have given over 100,000 miles of service."

"I consistently get 20,000 miles better than the next best tire I have been able to buy."

Bibb HR Processed Cords are made by a revolutionary process in which the fibers are bonded together and compacted—a result never before attained in the history of textiles. Since the fibers cannot slip or rub, HR Cord does not burn out or wear out because of friction heat and the carcass remains strong and vital after wearing out the original tread—perfect condition for retreading or recapping. Insist upon tires constructed with Bibb HR Cord.

# **BIBB**

The First Name in  
TEXTILES

# **HR CORD**

Trade Mark Reg.

U. S. Patent 2103218

Made exclusively by

**BIBB MANUFACTURING COMPANY**  
MACON, GEORGIA

**BIBB MANUFACTURING COMPANY**  
MACON, GEORGIA

G-105

Gentlemen: Where can I buy tires made with Bibb HR Cord? [ ]

I am interested also in V belts. [ ]

Name \_\_\_\_\_

Address \_\_\_\_\_

(CONTINUED FROM PAGE 78)  
 ages," the Coordinator's report points out, "would increase the annual costs derived in the present report as chargeable to motor-vehicle users for the period 1921-37 from \$10,383,568,000 to \$18,444,000,000. The total difference, 8 billion dollars, simply reflects irreconcilable approaches to the question of motor-vehicle user responsibility."

Mr. Eastman discusses at some length the allocation of costs.

"The difference of opinion again

involves a question of public policy," he says. "Highways have distinct public uses apart from transportation, but they have also always been regarded as having a general social and economic use which cannot adequately be characterized as a strictly transportation use. Because of this general social and economic use, which until recent years was predominant, the cost and upkeep of public highways were from time immemorial regarded as a proper burden upon general taxa-

tion, except for the occasional toll roads which were constructed for special transportation purposes and often were privately owned. Everyone derived an immediate benefit of one kind or another from the highways, and hence they could appropriately be made a general public burden. This is well illustrated by the railroads, which made only a small direct use of the highways but gained a large benefit from them as feeders for the rail lines.

"In recent years, however, with the development of the automotive vehicle and the paved road, the highways have come to have a large use not associated with the ownership of property subject to general taxation, and often for distinctly commercial transportation purposes and as a substitute for the railroads. So far as such uses are concerned, it is both logical and appropriate that the costs incurred in the construction and maintenance of the highways should be a direct charge on the users instead of a burden on general taxation."

Having allocated to highway vehicles their share of highway costs, the report takes up the question whether all groups of vehicles paid their proportionate share of the costs. In a highly technical and exhaustive analysis, the report considers the respective responsibilities of the different groups of vehicles for pavement costs (selection of pavement type, design of given types, and width and number of lanes, for costs incurred in lessening or eliminating grades and curvature, for costs of structures, for maintenance expense, and also includes consideration of the relative utilization made of road facilities by the various groups of vehicles. For its comparison of road costs per vehicle with payments per vehicle the report takes the year 1932 because of the availability of adequate material.

The comparison is presented on tabular form on page 21 of this issue. It shows that while trucks as a whole overpaid their way, certain classes of trucks did not quite meet their share of assignable costs. Underpayments are ascribed to school buses, to private trucks of 1½ tons and less rated capacity, to private and for-hire trucks of 5-ton capacity, and to private 5-ton combina-

(TURN TO PAGE 82, PLEASE)

## THORNTON Four-Rear-Wheel DRIVE

R  
A  
C



Turns a light, inexpensive truck into a husky heavy-duty giant capable of boundless traction and amazing economy. Ideal for contractors, oil field and other off-the-road operations. A

completely engineered unit that puts two driving axles under the load. SAVES 25-40% ON INVESTMENT, 30% ON OPERATION AND 35% ON UPKEEP!

## THORNTON Automatic-Locking DIFFERENTIAL

I  
O  
N

stops "one-wheel spin" which causes skidding and loss of traction—the defect in the ordinary differential. The THORNTON differential locks instantly and automatically, giving positive



traction where the going is slippery or tough. Keeps your vehicle operating when others have to quit. OWNER EXPERIENCE SHOWS BIG SAVINGS ON GAS, OIL, TIRES.

**THORNTON TANDEM CO., 8701 Grinnell Ave., Detroit, Mich.**

Please send literature on Four-Rear-Wheel DRIVE ☐  
 and Automatic-Locking DIFFERENTIAL ☐

Name ..... Company .....

Address .....

"When you need TRACTION you need THORNTON"

*Only*  
**CLEAN OIL**  
*is Safe Oil*



Sludge and dirt  
 collected by  
 AC Oil Filter in  
 5,000 miles

## AC KLEER-KLEEN OIL FILTERS

*remove all dirt and sludge*



The dirt and sludge which collect in engine oil cause a marked drop in compression by clogging piston ring slots. When this occurs, oil cannot drain away and is burned up, causing low oil mileage. Fuel consumption, also, goes up.

Those, briefly, are the reasons why every engine should be equipped with an AC Kleeer-Kleen Oil Filter. The efficiency of these filters is second to none, and has been confirmed over millions of bus and truck miles in every type of service.

### **Dirty Oil Costs You Money**

Avoid service interruptions, and save money, by equipping with AC Kleeer-Kleen Oil Filters.

### **IGNEONITE**

*Rigid, Molded, One-piece, Non-channeling Element*  
 A patented and exclusive AC advantage. Maintains its shape, will not erode, is not affected by water or acid. Renewable without disturbing connections.

*NEEDS REPLACING ONLY when oil darkens to the point where the gauge stick marks can no longer be read easily.*

### **3 COMMERCIAL SIZES**



**Model L-1** for engines up to 6 quarts crankcase capacity, with displacements up to 300 cubic inches.



**Model S-1** for crankcase capacities up to 10 quarts, and displacements up to 500 cubic inches.



**Model S-3** for crankcase capacities over 10 quarts, and displacements over 500 cubic inches.

AC SPARK PLUG DIVISION • General Motors Corporation • FLINT, MICHIGAN

COMMERCIAL CAR JOURNAL  
 MAY, 1940

*When writing to advertisers please mention Commercial Car Journal*



(CONTINUED FROM PAGE 80)  
tions. The total amount of these underpayments is \$8,000,000 for the year 1932.

"Because of their large numbers," the report says, "the private 1½-ton and less trucks, though charged with an average underpayment of only \$5 each, accounted for most of the total underpayment."

The report points out the fact that "a high degree of accuracy necessarily is impossible in an analysis of this kind" and cautions against "at-

taching great weight to these small differences."

Regarding its comparison of costs per vehicle, the report makes some observations which it considers "in order":

"1. The charges against the group of largest buses may appear low to some. Consideration needs, however, to be given to the fact that this group covers a considerable range of sizes and that many of the largest vehicles are used only on city streets, the costs of which are broadly dis-

tributed because of the many vehicles which use them.

"2. School buses entail a relatively high charge because of their using preponderantly secondary and local roads, the costs of which on a vehicle-mile basis are high.

"3. Large commercial vehicles make relatively less use of county and local roads than do small ones, but all trucks and combinations, except farm and other light trucks, make comparatively small use of such roads.

"4. The number of miles a vehicle is driven and the distribution of this mileage to systems obviously have exerted a large influence on the costs assigned to it. The lower charges to contract than to common carrier buses and to private than to for-hire trucks are largely explained by the smaller annual mileages of the contract and private vehicles. The farm truck escapes a heavy charge by reason of its very low annual mileage.

"5. Larger costs are generally assigned combination vehicles than straight trucks, largely because of their greater annual mileages. The exceptions are found in the '3- and less than 5-ton' groups. In this instance lower impact wheel loads were assigned to combinations than to single units."

The report explains that "no attempt has been made to determine payments for 1937 corresponding to those shown for 1932 owing to the lack of adequate material and to the difficulty of making reliable detailed estimates." An official press release states in this connection that "in general, it may be said that the lighter trucks would be assessed less and the heavier vehicles more, and that, considering the upward trend in payments per vehicle and other changes, 1932 to 1937, there would be one or two instances of slight underpayments in the case of the larger vehicles, with no underpayments in the case of light vehicles."

It is to be hoped, as Dr. Morgan of the Coordinator's Section of Research expresses it, "that these reports will contribute to the disposition of at least some of the controversies which have characterized public discussions of the 'subsidy' question and that, where they fail to accomplish this much, they will

(TURN TO PAGE 84, PLEASE)



## AMAZING MANEUVERABILITY AND TRACTIVE POWER . . .

*On the Highway and Off!*

● Here's the vehicle you've been looking for—and wondering why *someone* didn't build! A short-coupled, short wheel base, *All-Wheel-Drive* cab over engine Ford with amazing ability to get in and out of ditches, pits, cuts and fills with heavy loads. Fitted with the dump body of your choice it will run rings around any other truck you ever saw in excavation work, road building and maintenance, and in general hauling. Equipped as a trailer tractor it will handle heavier loads with greater safety and speed on slippery highways and hills. "Jack-knifing," sliding and skidding are almost impossible.

Power and traction on all wheels, plus ability to "turn on a dime," makes this the most versatile, the most maneuverable little vehicle that ever came down the pike—the most active, agile job that ever pushed its way through the rubble and muck of pit and mine.

We convert all standard Ford trucks, passenger cars and commercial cars to *All-Wheel-Drive* and build a complete line of Heavy Duty *All-Wheel-Drive* trucks with gross capacities up to 70,000 lbs. Write for literature. Cable address MARTON, Indianapolis, Indiana, U. S. A.

**MARMON-HERRINGTON COMPANY, INC.**  
INDIANAPOLIS, INDIANA, U. S. A.



You'll get a fine report on engines equipped with  
**LYNITE<sup>\*</sup> T-SLOT**  
**LO-EX PISTONS**

REG. U.S. PAT. OFF.

Fleet drivers have very definite ideas on what goes into an engine. They should have! What a shop does to an engine seriously affects the driver's daily record; the miles he can cover, his time on the road, the oil and gas charged against his account.

Drivers say they can tell the difference when engines are equipped with Lynite T-Slot LO-EX Pistons.

They get better performance, added fuel and oil economy, and less formation of carbon.

The lighter weight of these pistons reduces bearing pressures, so bearings last longer. Lynite T-Slot LO-EX Pistons have low coefficient of expansion, give maximum heat flow, permit close clearances. ALUMINUM COMPANY OF AMERICA, 1916 Gulf Bldg., Pittsburgh, Pa.



Reg. U.S. Pat. Off.

\* REG. T. M., ALUMINUM COMPANY OF AMERICA

LYNITE LO-EX PISTONS — A PRODUCT OF  
**ALCOA · ALUMINUM**  
 CAST ONLY BY ALUMINUM COMPANY OF AMERICA

(CONTINUED FROM PAGE 82)

serve to direct these discussions into more profitable channels and point the way to further fact finding of a sound character."

Editor's note: The office of the Federal Coordinator of Transportation was supported, under the Emergency Railroad Transportation Act of 1933, by assessments on the railroads paid into the Treasury of the United States. These amounted to \$1,451,313 during the three-year life of the Coordinator's office. When the office ceased to exist in 1936 the Research Department had largely completed the tentative reports in its subsidy investigation. In the period that has intervened the reports were submitted to interested parties for comment and criticism which in turn opened up new lines of inquiry that had to be pursued, and then whipped into final shape for publication. The four printed volumes are available only in sets (\$2.40 per set), from the Superintendent of Documents, Washington, D. C.

## BIRD-WHITE LIFT

(CONTINUED FROM PAGE 40)

Absolute stability is claimed even when lateral extensions are used at extreme elevations. From the axle to the top of the platform, the new unit is locked into one rigid piece. This stability is made possible by high pressure hydraulic jacks equipped with springs. These return jacks, operating independently of the lift, consist of a hydraulic ram which, at the push of a button, lower and lock the frame and the axle together—thus eliminating all spring action and sidesway. The jacks can be installed on tower lift equipment now in use to accomplish the same purpose of stability.

### Lincoln Welding Handbook

"Procedure Handbook of Arc Welding Design and Practice," sixth edition, just announced by The Lincoln Electric Co., Cleveland, Ohio, contains 1125 pages and a total of 1557 illustrations, including photographs and drawings. The Handbook is reissued to include all new data essential for most efficient use of arc welding in all its varied applications. The new edition contains the results of two years of fact-finding by a staff of 200 arc welding application engineers contacting every industry throughout the world. Price postpaid in U. S. is \$1.50.

## LEGISLATIVE LOOKOUT

(CONTINUED FROM PAGE 17)

the "pitiful inadequateness" of Kentucky highways to carry heavier loads. At the same session, Floyd D. Strong, Secretary of the Kansas Port of Entry defended his system on the grounds that it did not constitute a trade barrier.

Previously, John V. Lawrence of American Trucking Associations, Inc., had told the committee that state laws governing motor transport operations are "a definite hodge-podge of conflicting requirements" which make interstate operations difficult and costly.

Meanwhile other states were busy extending new reciprocal agreements. Louisiana and Tennessee announced new reciprocity giving full privileges to all motor vehicles of either state with the single exception of buses. . . . Oklahoma and Arkansas have agreed on reciprocity for passenger cars and private trucks, but the agreement does not include vehicles operated on a fixed schedule for compensation or for hire, vehicles operated on dealer plates or in course of delivery, or vehicles transporting alcoholic beverages.

Eight seasonal border plant quarantine inspection stations are expected to be opened by the State of California between May 1 and May 15 and will remain open until late October.

Fifteen states have been invited to send delegates to the Western Conference on Interstate Trade Barriers

to be held in Salt Lake City early in June. The conference will be somewhat similar to meetings held recently in Denver and Santa Fe.

On June 3 an additional conference will be held in Albuquerque, N. M., arranged by the Colorado secretary of state as an outgrowth of the Salt Lake City meeting.

Florida has announced full reciprocity agreements with Indiana, Maryland, Tennessee, Ohio and Massachusetts.

The new agreement between Texas and Louisiana provides unrestricted use of the highways for operators who haul only individually-owned products. Private carriers may make five trips per month of not more than five days' duration, and common carriers are allowed two trips per month of not more than four days' duration.

Wisconsin agreements with other states have hit a temporary snag pending outcome of a charge made by a representative of the railroad brotherhoods against the director of the Motor Vehicle Department that he is exceeding his authority by making reciprocal agreements. A letter to the director has demanded a ruling from the attorney general on the legality of the procedure.

## Shutters Now Available for Most Truck Models

After three years of engineering development and field work with selected fleets, Pines Winterfront Co. has completed its program of making radiator shutters available for most of the well-known makes of trucks. Shutters have been engineered for recent and current models of Ford, Chevrolet, Dodge, International Harvester, General Motors, Mack, White, Studebaker, Diamond T, Reo, Sterling and Willys trucks, and for certain models produced by other companies. In most cases these shutters are available installed at the factory, and arrangements are being made to have shutters available at factory for all current truck models.

Both manually operated and thermostatically controlled shutters are being offered, the type of control available for any particular make of truck varying with the decisions of the engineering departments of the factories providing factory installation. The manually controlled shutters are operated by a recently developed device attachable to the instrument panel. The automatic shutters are controlled either by a large Fulton thermostat mounted in the top tank of the radiator or on the engine block; or by a new non-compressible thermostat so compact that it can be installed in a housing incorporated in the hose line between the engine block and the radiator.

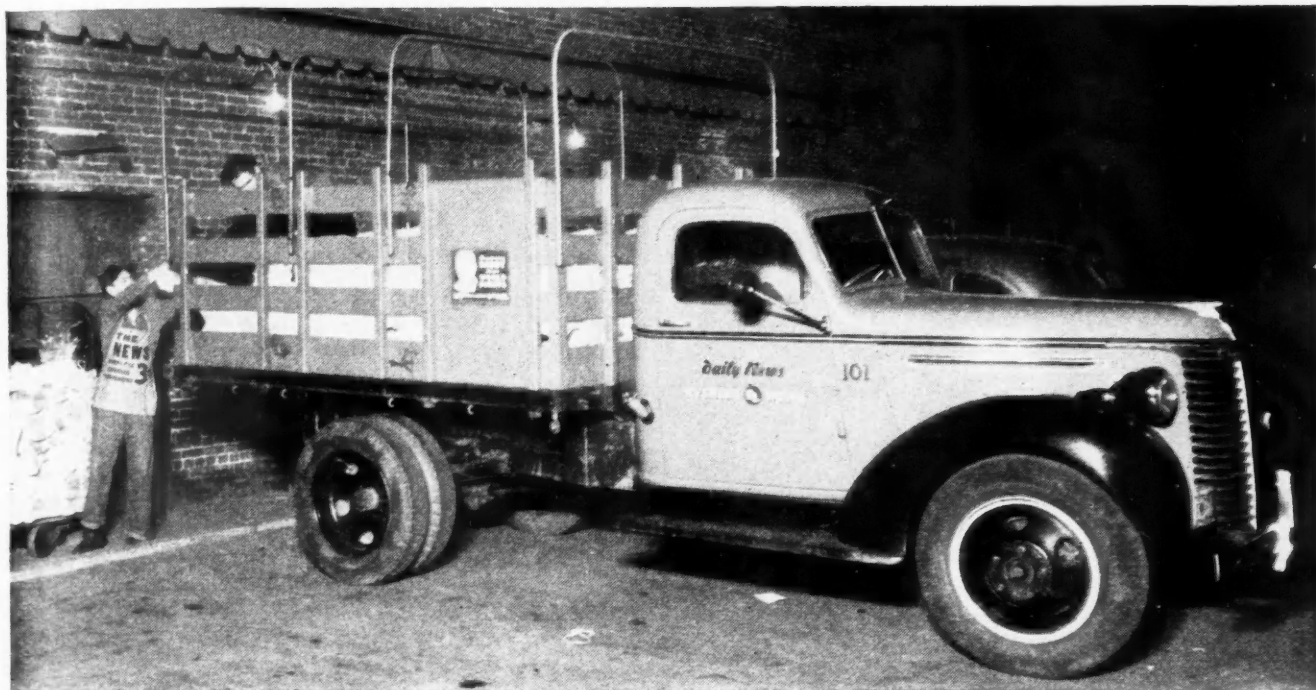
## QUIZ ANSWERS

See Page 18

1. c. None of them. They are hydrocarbon—quite a different thing.
2. a. All of them.
3. c. None of them. The even numbered ones go East and West, the odd numbered North and South.
4. b. Some of them. CoMax and NoRol are. Zerone and Permite are not.
5. a. All of them.
6. c. None of them. Sulphuric acid is the common electrolyte.
7. c. None of them.
8. b. Some of them. Magnesium would make a mighty soft piston.
9. b. Some of them. Major auto shows extended from Oct. 14, opening date in Toronto, Rochester, and Los Angeles, to Dec. 16, closing date in Chicago.
10. a. All of them.



# Truck Buyers Demand Facts— CHEVROLET GIVES *Certified Proof!*



Ask your Chevrolet dealer for a copy of the booklet containing facts and figures relative to Chevrolet truck test runs.



For two years this 1 1/2-ton Chevrolet truck has been engaged in a truck run without parallel either in the history of the automotive industry or in the records of the American Automobile Association. The truck has operated day after day, in all kinds of weather, and on all kinds of roads.

Here are facts about Chevrolet truck performance on the longest truck test run ever conducted under the supervision of the American Automobile Association, using a stock 1 1/2-ton Chevrolet truck, and traveling through Canada, Mexico, and every State in the Union.

Number of miles.....	100,015.9
Payload.....	4590 lb.
(exclusive of driver and observer)	
Gross weight.....	9260 lb.
(with driver and observer)	
Average speed.....	33.07 miles per hour
Average miles per gallon of gasoline.....	15.10
Oil actually consumed.....	93.29 quarts
Miles per quart of oil consumed.....	1072
Total operating cost per ton-mile, including gas, oil, lubrication and repairs and replacements (including twelve tires).....	\$0.00419

These facts prove conclusively that Chevrolet trucks are low in operating and maintenance costs, and are exceptionally dependable and durable under the hardest usage.

CHEVROLET MOTOR DIVISION, General Motors Sales Corporation  
DETROIT, MICHIGAN



**BEST HAULERS • BEST SAVERS • BEST SELLERS**

## EFFICIENCY COMES FIRST

(CONTINUED FROM PAGE 31)

month, catching rides with salesmen and line crews when he could be furnished a company car for a total actual cost of only \$43 per month.

Or even take the case of Bill Jones who reads meters in sections of low customer density and draws \$100 a month. If he could read twice as many meters using a car, the com-

pany would be getting twice \$100, or \$200 worth of meter reading done for only \$100, plus \$43, or \$143. This would not only be a cash saving of \$57 per month, but instead of having a second man on the payroll with all the accompanying liabilities, there would only be an additional car. A car may be disposed of at will if the need no longer exists, or if it should prove unsatisfactory.

The average truck in our fleet above the 1-ton size costs but \$63 a month, but the average line crew

costs about \$800 a month. If a line crew could do only 10 per cent more work by using two line trucks instead of one, it would be economical to give that crew two trucks. It would result in 10 per cent of \$800 or \$80 extra work per month for only \$63 spent for the additional truck. And here again the liability of additional employees may be avoided. A further advantage would be that by using two trucks they could be lighter, more maneuverable, and less expensive to operate. We have tried this plan in one instance and found it to be highly successful.

When setting governors on line trucks we seldom stop to consider that although the truck may cost but 12 cents per mile, an \$800 a month line crew riding to work on it is costing 15 cents per mile if the average speed is 30 miles per hour. If the truck's average speed is reduced to 20 miles per hour, the crew's cost is increased to 23 cents per mile, an increase of 8 cents for each mile. Thus the slight savings in vehicle cost with an abnormally low governor setting may be far less than the increase in labor cost.

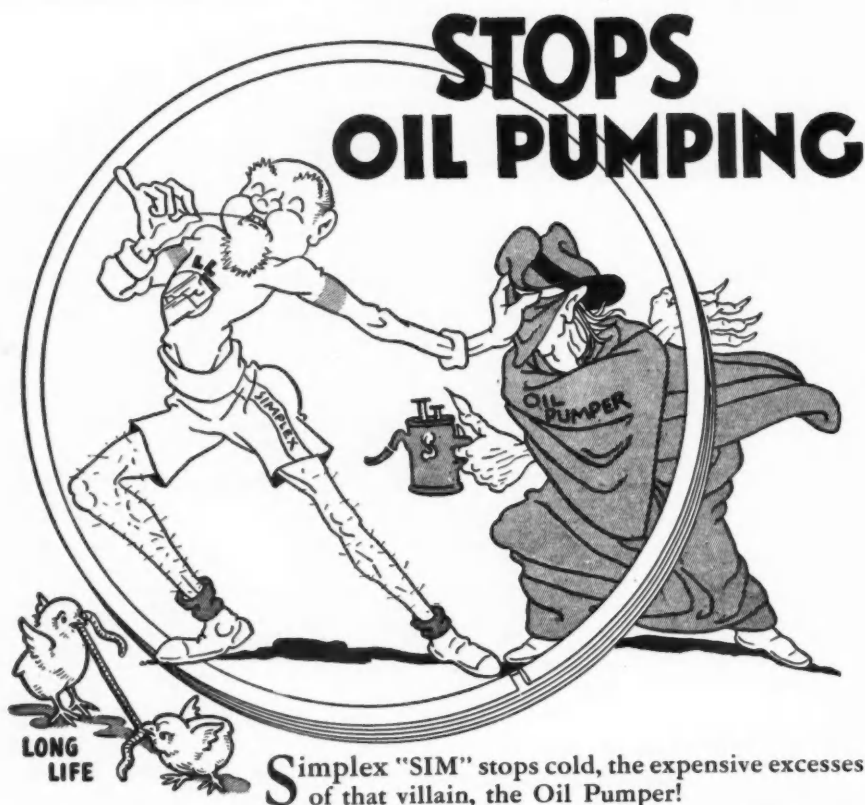
Many fleets have gone through campaigns of drastically reducing the number of vehicles. If the employees that need the vehicles are laid off also, there is no question about the program being sound. But to eliminate automobiles alone may make other operating costs increase by a larger proportion. At the present rates of pay, it may mean big losses to do anything tending to reduce employee efficiency.

Transportation is one of the least expensive adjuncts in public utility work, and its use, where effective, should not be stinted. A car costs less per month than the cheapest laborer our company can hire!

It is the fleet supervisor's job to see that equipment is not bought unnecessarily and that the vehicles which are added are put in places where most needed. After all, it is he who is called on the carpet to explain what became of the "40 additional vehicles that were in the budget" and explain away the additional mileage.

Even though the door be left wide open for providing ample transportation facilities for every bona fide need, there still remain plenty of

(TURN TO PAGE 112, PLEASE)

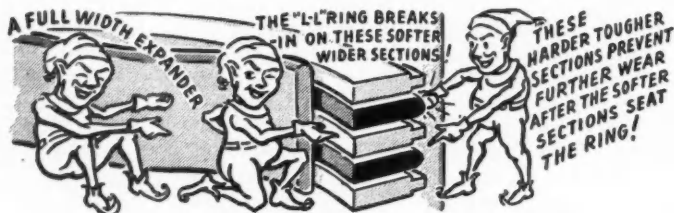


Simplex "SIM" stops cold, the expensive excesses of that villain, the Oil Pumper!

The new Simplex "LL" Ring is your best answer as a repairman to your customer's complaint, "my car is using too much oil." Shops, everywhere, are now selling Simplex Long-Life Reconditioning, providing thousands and thousands more miles of sweetest engine performance with a clean, smokeless exhaust.

You, too, will find this new method which combines quick-seating, oil-saving and long-life in the same ring, more to your liking.

Phone your Simplex Distributor today for Long-Life, on-the-piston, reconditioning service.

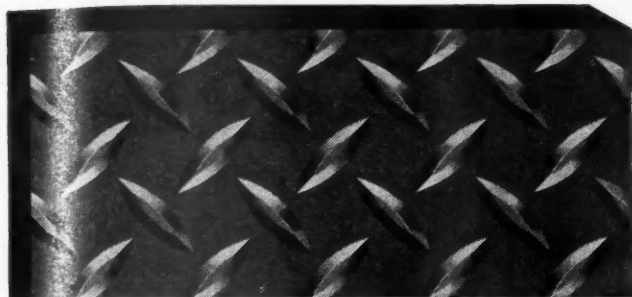


**SIMPLEX PRODUCTS CORP.**  
3820 Kelley Avenue • Cleveland, Ohio



**SIMPLEX "LL" PISTON RINGS**

*Do a better job - give 'em "LL"!*



"A.W." Super-Diamond Pattern . . . Diamonds half actual length

**"A.W." Rolled Steel FLOOR PLATE** Safe in any weather. Crack-proof, heat-proof, oil-proof. No maintenance expense. Booklet on request.

ALAN WOOD STEEL CO., CONSHOHOCKEN, PA.

## Shopmen Need Washer Assortments

Every shop bench should be equipped with assortments of washers. WHITEHEAD has all S. A. E. standard sizes, very reasonably priced. Order through your jobber.

**WHITEHEAD STAMPING CO.**

1685 W. Lafayette Blvd.

Detroit, Mich.

SEE

## HIGHWAY TRAILER COMPANY'S FREIGHTMASTER '40'

SEMI-TRAILER VANS OF ALL TYPES

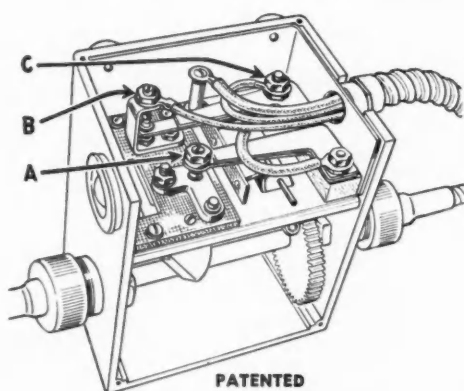
FOR

NEW LIGHT WEIGHT AND LOW PRICE COMPLETELY MANUFACTURED UNITS

AT

YOUR NEAREST HIGHWAY DEALER OR WRITE FOR COMPLETE INFORMATION

HIGHWAY TRAILER CO. Edgerton, Wis.



PATENTED

## SPEED CONTROL Without Loss of Power

The SAFETY SPEED CONTROL is not a conventional governor. Our unit allows normal motor performance in all speeds up to the set speed limit. This allows full power in any gear for hills, mud or snow driving, heavy pulls—and quick acceleration.

With only ONE adjustment to control speed, it offers fleet operators distinct economy in fuel consumption and maintenance costs. It operates from the speedometer cable, a radical change from old-type governors.

With unit set for 40 m.p.h. maximum, the following occurs:

- 1.—At 41 m.p.h., horn or buzzer sounds warning.
- 2.—At 42 m.p.h., SAFETY SPEED CONTROL cuts in to reduce speed.
- 3.—Accelerator is released until horn stops blowing, and travel may be resumed without loss of power or efficiency.

The SAFETY SPEED CONTROL is meeting speed control and economy problems of fleets successfully. If your distributor has not stocked a supply, write direct for further particulars and their application to your specific fleet.

**SAFETY SPEED CONTROL COMPANY**  
4242 West Chicago Ave., Chicago, Illinois



**Crowing?**

YES! about the

**NEW**

**KNOCK-OUT**

## UTILITY GRINDER FOR 100 DIFFERENT USES

### ATTACHMENTS:

1. Carbon Cleaning
2. Sanding Disc
3. Sanding Drum
4. Hand Grinding
5. Lathe Grinding

**You'll be sorry**

If you don't get full information before you buy!

K-O tools can be purchased from your regular jobber.

Ask for bulletin U395C



**K. O. LEE & SON CO.**

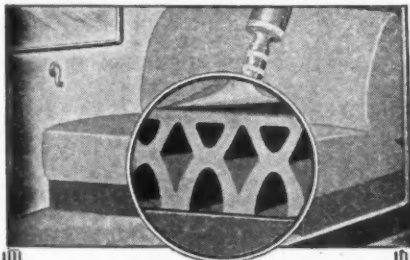
Aberdeen, So. Dak.

"practical tools for practical men"

**KNOCK-OUT**



## SLASH MAINTENANCE COST with Black Diamond All-Rubber SEAT CUSHIONS



Truck operators who now use Black Diamond all-rubber seat cushions and back rests exclusively do not hesitate to say that they give longer wear, with no upkeep expense, than any other seat cushion they have ever known. There can be no question about their economy as exclusive diamond grid construction and quality materials assure the best at less cost. Cool and luxuriously comfortable. Will fit any size truck. Write today for details.

**KARPEX MANUFACTURING CO.**  
1424 E. 19th St. Indianapolis, Ind.

E

You can depend on

**EBERHARD TRUCK HARDWARE**

Each Eberhard design features the straight-forward construction of best materials, sturdy construction and simple mechanism to meet an actual need in truck operation.

EBERHARD MANUFACTURING CO.  
Division of the Eastern Malleable Iron Co.  
CLEVELAND, OHIO

COMPLETE DESCRIPTIVE LITERATURE ON REQUEST

EBERHARD

AUTOMOTIVE HARDWARE

WAUKESHA

Multi-Fuel  
ENGINES

DIESEL OIL  
GASOLINE  
BUTANE

ALL LIQUID OR GASEOUS FUELS

THUMB-SCREW  
ADJUSTMENT  
BALANCED  
(9-SIDE) PULL

OVER  
LAPPING  
SEAL

ONE  
SIZE FOR  
MANY

ADJUSTABLE  
FOR SIZE

TRADE MARK

NOC-OUT

THE HOSE CLAMP WITH  
THE THUMB SCREW

Seals absolutely against  
leakage of antifreeze,  
radiator connections, or  
heater hose. Type A,  
Adjustable, the Clamp  
with the thumb screw,  
1 size fits many. Type  
GBH for heater hose.  
Type GBB for Booster  
Brakes.

WITTEK MFG. CO.

4305 W. 24th Pl., Chicago, U.S.A.

## EFFICIENCY COMES FIRST

(CONTINUED FROM PAGE 86)

economies in the fleet itself that can be made without hampering the efficient operation of the company.

### 1. Eliminate Personal Use and Unnecessary Business Use of Vehicles

This is put first because there is relatively little saving that can come from operating economies in a modern fleet, compared with the possible savings from reduced mileage. For instance, a total cost per mile for cars and light trucks of 3.6 cents, including depreciation, is getting fairly close to the bare minimum for present day equipment. However, each mile eliminated results in a saving of the entire 3.6 cents. (Even if the number of vehicles is not reduced in proportion to the mileage, each mile eliminated would still save 2.1 cents in actual operating cost.) Our attempts in reducing unnecessary mileage are principally as follows:

(a) Budget the mileage for each division of the company and have the divisions in turn budget each department and district and finally each individual. This has been most effective. Over-running the budget by a driver does not necessarily indicate personal mileage, but it may mean poor planning of work. This is even worse, as it involves wasting the company's time as well as mileage.

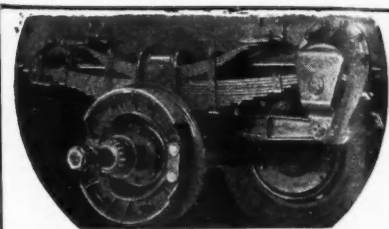
(b) Keep as many cars "pooled" as operating efficiency will permit. Cars kept in the company garage during non-working hours are not available for personal use.

(c) Assign cars only to those who actually need them. A car is really a tool and not a prerequisite of higher positions in the company.

(d) Paint the vehicle red. No one wants to take his date out in a car that is painted like a fire truck and easily identified.

(e) Never buy a passenger car when a commercial vehicle will do as well. Who wants to drive a truck any farther than necessary?

(f) Encourage the use of trains and other public conveyances when it does not interfere with the job. A car may save enough time to justify the added cost, but after driving a hundred miles or so, the employee's fatigue may so reduce his efficiency



GRAMM TRAILERS

"Ask the man who pulls one"

P Series Timken Power Brakes  
Now Standard

GRAMM TRAILER DIVISION, Delphos, O.

FRINK

SNO-PLOWS

REG. U.S. PAT. OFF.

Both "V" TYPE and  
ONE WAY BLADE TYPE

hand or power hydraulic control

FOR ALL MOTOR TRUCKS  
FROM 1½ to 10 TONS

Write for catalog 38AC and 38BC with discount to truck dealers.  
CARL H. FRINK, Mfr., CLAYTON, 1000 1st., N. Y.  
DAVENPORT-BESLER CORP., DAVENPORT, IOWA  
FRINK SNO-PLOWS OF CAN. Ltd., TORONTO, ONT.

Specify . . .

XACTO Printing Pump  
To Check Fuel Deliveries  
at the Pump

AKRAFLO Fuel Consumption  
METER to Check  
Fuel Consumption at the Motor

S. F. BOWSER & CO., INC.  
1360 Creighton Ave.  
FORT WAYNE, INDIANA

HOOF GOVERNORS

Low Maintenance — Tamper Proof — Full Engine Power

Key and  
Seal  
Type

Dash  
Control  
Type

Hoof Products Company

Dept. BEC, 6543 S. Laramie St. Chicago

The Mobile  
REFRIGERATION UNIT

The unit offering . . .  
Economy  
Compactness  
Adaptability

. . . in the most efficient type refrigeration on the market.

Write today for catalog.

MOBILE REFRIGERATION, INC.

118 E. 40th Street, New York City

that he only does a halfway job.

(g) Use recording devices to check up on questionable improper use.

(h) In the case of mileage contracts, limit the amount that will be paid to the equivalent number of miles considered necessary for job.

## 2. Build Up the Use Factor

It is surprising how much the cost per mile goes up with the lowered mileage. At our present average of 1200 miles per vehicle per month, the total cost per mile is 3.6 cents. However, those vehicles operating only 800 miles per month are costing 4.4 cents per mile, or 22 per cent more. If our entire fleet of cars and pickups averaged only 800 miles a month, it would cost us \$67,000 more per year to cover the same mileage. There are several ways to increase the use factor:

(a) The pooling of cars is most effective in achieving this, as it eliminates low mileage assigned cars. The larger the pool the more effective it is, because it gives greater diversification, and as utility men know, diversification levels off the peaks and builds up the load factor.

(b) In cases where a car is in use full time and yet makes low mileage, as with home economists, a mileage contract is highly desirable. It is also the most economical way to take care of employees who must have a car available at all times but actually use it infrequently.

(c) By using U-drive-its to handle the peak seasonal requirements. To provide company cars for these occasional periods would mean some cars would be idle for long periods of time, and have a monthly mileage of perhaps only 300.

(d) By staggering working shifts and using the same vehicle for more than one shift. This can often be done in the case of appliance repairmen, meter readers, etc. Of course the efficiency of the man should be given first consideration for true economy.

## 3. Purchase Equipment Having Lowest Overall Economy Consistent with Safety and Sufficient Comfort

This involves quite a few factors:

(a) The make of the vehicle. Accurate records show that for every fleet there is one make of vehicle that  
(TURN TO NEXT PAGE, PLEASE)



*Life is Priceless  
—Safety Cheap*

## Equip your trucks with a Vickers Hydraulic Brake Booster—it will STOP your heaviest truck in HALF the time.

The action of the Vickers Booster is positive—always dependable. It gives you more power at the brake pedal, and faster power at the brake shoes. It will STOP the heaviest load and permit perfect control without sudden stops or "grabby" action. One size fits any hydraulic brake system, regardless of size of vehicle.

If such a brake booster seems impossible at only \$19.50 (plus installation cost)—we'll prove it to you right on your own truck! It will pay you to investigate the advantages of a Vickers Hydraulic Booster for your trucks.

**SOLD WITH A MONEY-BACK GUARANTEE**

*Write For Details—Today*

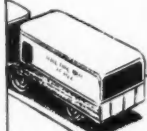
**VICKERS POWER BRAKE CO., INC.**

2421 No. BROAD STREET

PHILADELPHIA, PA.

Atlanta \* Norfolk \* Chicago \* Milwaukee \* Galveston \* Los Angeles

## "Corky" Comments



Along the highways, near and far,  
Are trails of oil from truck and car,  
I think I'll have to tell the boss  
Cork Gaskets will prevent this loss!



"CORKY" means Armstrong-Victor Cork Gaskets, of course. For experience has shown that a leakproof, trouble-free job can be guaranteed every time these top-notch gaskets are used. They're made from live, resilient cork—a natural seal against oil, water, and grease. And the bolt holes always line up, so these gaskets are easy to install. Ask your Victor jobber for List No. 29, or write to Victor Manufacturing & Gasket Co., P. O. Box 1333, Chicago.



**Armstrong-Victor CORK GASKETS**

CORKLIN IN ROLLS

CORK HEADLAMP STRIPS

**BALDOR**  
BALL BEARING **GRINDERS**

**They WON'T BURN OUT**



Ruggedly built. Ball-bearing Capacitor type motor protects against burn-out. Weight, 39½ lbs. Guaranteed 1 year ..... **\$20.50**

BALDOR ELECTRIC CO.  
4340 Duncan Avenue  
ST. LOUIS, MO.

**KEEP YOUR  
VEHICLES MOVING  
ECONOMICALLY**  
with  
**HALL VALVE SERVICING  
EQUIPMENT**

Ask Your Jobber or write  
**THE HALL MFG. CO.**  
TOLEDO, OHIO



**ELIMINATE  
RUN-DOWN  
BATTERIES**

... for low-cost battery mileage. Now, it is simple and inexpensive to keep batteries at efficient charge to prolong battery life. The Valley Guaranteed (two years) Charger connects to lighting circuit—is easy and economical to operate—no moving parts. Write for FREE bulletin, today.

Model G-12 charges 1 to 12 6-volt batteries. NOW ONLY ..... **\$25.00**  
Other sizes at equally low prices.

**Valley Electric Corp.**  
4221 Forest Park Blvd. • St. Louis, Mo.

**Kingham**  
**UNIVERSAL**

**TRAILERS  
BODIES  
WINCHES**

**KINGHAM TRAILER CO.**  
INCORPORATED  
LOUISVILLE KY.

#### ICC Tank Truck Rules

The ICC's new rules regarding transportation of inflammable liquids become effective June 15. General and specific rules and specifications covering vehicles, tanks and equipment are included.

(CONTINUED FROM PAGE 113)

is the most economical under that fleet's operating conditions. It is generally thought that any one of the Big Three makes of cars is as economical as the other, but actual fleet records have indicated that there is sometimes a variation of from 10 to 18 per cent in operating cost between them. One make may be more economical under one set of operating conditions, while another may prove better under other conditions.

(b) Limit the number of higher priced cars to the irreducible minimum. After all, the company car is simply a means of transportation.

(c) From \$40 to \$80 per car can be saved in the purchase price by not buying de luxe models. In most cases the regular and de luxe models are the same mechanically.

(d) Use regular commercial body types whenever they will serve the purpose satisfactorily.

(e) Keep the investment in line trucks low, so these vehicles can be replaced before becoming obsolete. Our line trucks average only about 7000 miles per year and quite a few run less than 4000 miles per year. Why pay the price of a truck good for 100,000 miles when it may become obsolete in performance and ability in six to 10 years, after operating only about 40,000 miles? Of course, a truck must have sufficient power to do the job economically and have sufficient capacity to carry the necessary material.

(f) Leave off gadgets and fancy accessories. Those that stand the test of time are usually made standard equipment when they become sufficiently reliable and justifiable in price.

(g) Always get competitive bids. The concern whom you wish to favor with the business can thus be kept in line.

#### 4. Recognize the Economic Point for Vehicle Replacement

A study made by our company in

**OSHKOSH**  
**4 Wheel Drive Trucks**  
A proven product. 1½ to 10 ton capacity. Write for complete information.  
**OSHKOSH**  
Motor Trucks, Inc.  
Oshkosh, Wis.



The largest  
fleets  
specify  
↓  
**CONNECTICUT**  
DIRECTIONAL  
SAFETY SIGNALS

**SAVE WEIGHT**  
with  
**REPUBLIC**  
**DOUBLE STRENGTH**  
**STEEL**

---  
**REPUBLIC STEEL CORPORATION**  
General Offices - Cleveland, Ohio

**Lower Your Filter  
Maintenance Costs**  
**Michiana Products Corp.,**  
Michigan City, Ind.  
**MICHIANA**  
**FILTERS**

WRITE FOR  
BULLETIN 839



1933 indicated that by replacing vehicles more frequently the savings in maintenance cost would more than offset the added cost of rapid replacement. In actual practice since 1934

**KATHANODE** The original Spun Glass battery with  
**DOUBLE LIFE.** For all truck and bus  
services. KATHANODE CORP., CHICAGO



**OVER 70% OF ALL  
MAKES OF TRUCKS  
AND BUSES ARE  
Zollner EQUIPPED**

**ZOLLNER**  
HEAVY DUTY PISTONS

ZOLLNER MACHINE WORKS      FORT WAYNE, IND.

**KINNEAR TRUCK DOORS**  
*Also Doors for Buildings*

**ALL METAL**  
Coils like a  
window shade, out  
of the way. . . . .  
**CONVENIENT  
BURGLAR PROOF  
FIRE PROOF  
MORE DURABLE**

*Write for Details*  
The **KINNEAR**  
Manufacturing Co.  
2100-20 FIELDS AVE.  
COLUMBUS, OHIO  
Factories: San Francisco, Cal., and Columbus, Ohio



For information on

**SHULER  
AXLES**

see advertisement in the  
June issue

**NEW  
SpeedWay 1 1/2" No. 89  
DRILL**

Full size, full weight, full capacity. Specially wound, high torque 115 V Universal 500 r.p.m. SpeedWay Drill Motor. Forced air cooling, oilless bearings, new natural grip breast plate and removable side handles. Streamlined die cast case. If your dealer can't supply, order direct on 10 day trial.

**\$24.50**

**Circular Free**

SpeedWay Mfg. Co., 1840 S. 52nd Ave., Cicero, Ill.



we have found that by trading at 50,000 miles instead of at 75,000, or over, the depreciation cost increased only from around 6/10 cent per mile to 9/10 cent, a net difference of 3/10 cent. On the other hand, repair expense alone dropped from about 1 1/2 cents per mile to about 1/2 cent, a reduction of 1 cent per mile. Thus, we have a net saving of 7/10 cent, not including the additional savings in tires and fuel expense. Although part of this reduction is due to other factors, with a reduction of 7/10 cent per mile in overall cost it certainly couldn't be said that the new replacement policy is costing as much. Aside from the direct savings, the many other advantages of having a fleet of comparatively new vehicles can be appreciated by all.

In connection with replacements, it is important to shift periodically cars that are in low mileage service to a higher mileage service so they will not have to be replaced because of age alone.

#### 5. Use Throttle Stops

Some fleetmen are opposed to the use of throttle stops, but perhaps they have never given the idea a thorough trial. We have used throttle stops since 1934 and at present have them on 95 per cent of our cars and 1/2-ton trucks. In using throttle stops it is important to set them high enough not to limit the speed and power below that required for the job. Half throttle on most cars gives a speed of better than 60 miles per hour and ample power and acceleration to meet actual needs. We have never had an accident due to the reduced acceleration, although this is one of the arguments sometimes given against its use. Moreover, we believe that the throttle stop is a

(TURN TO NEXT PAGE, PLEASE)

**BEAURLINE  
FOUNTAIN  
BRUSHES**



**WASH FLEETS FASTER**

**FASTER washing ability—longer-wearing brushes—washing, rinsing and polishing in one operation—are features that make the BEAURLINE Fountain Brush preferred by leading fleet owners everywhere. Save time, materials, money—do a better cleaning job, faster. Use "BEAURLINE".**

**ASK FOR BULLETIN**

**RAPIDS PRODUCTS COMPANY, INC.**  
220 6th Street N.W. P.O. BOX 207  
CEDAR RAPIDS, IOWA  
SUCCESSORS TO BORG-TEMPLETON CORP.

**NEW MEEHANITE**  
HEAVY-DUTY  
TRAILER BRAKE DRUM

Designed to resist wear and dissipate heat. Smooth-finish . . . non-galling.

Developed by Meehanite Research Institute, Pittsburgh, Pa., in co-operation with General Foundry & Manufacturing Co., Flint, Mich.

**WRITE FOR DETAILS—**

**Available  
Trucks**

Builders of fine Motor Trucks, Tractors, Trailers and Buses since 1910.

Capacities from 1 1/4 to 10 tons.

*Write for bulletin*

**AVAILABLE TRUCK COMPANY**  
2501 Elston Ave. Chicago, Illinois

## CLEANS COOLING SYSTEM AS YOU DRIVE



WonderSOLV cleans cooling systems safely—thoroughly—without tying up your equipment. Made from the juices extracted from natural vegetation. No chemicals. No commercial acids. Dissolves rust and scale, so that it may be drained off with water. Removes grease and sludge. Conditions cooling system against further rust. No back-flushing. Try

a can and see what really can be accomplished. Costs you nothing if dissatisfied. Return can and get your money. See your jobber, or write—Miller Mfg. Co., 1220 Kaighn Ave., Camden, N. J.

**Wonder SOLV**  
CONTAINS NO CHEMICALS, NO COMMERCIAL ACIDS



## FULLER

### TRUCK TRANSMISSIONS

For easy shifting, quiet operation, hauling power and dependability, be sure to choose trucks equipped with FULLER'S.

**FULLER MFG. CO.**  
KALAMAZOO, MICH.

### "FINGER TIP ECONOMY" with the GAS MASTER

A four-inlet, one outlet gasoline control valve, the GAS MASTER enables the operator to control fuel supply to engine constantly. Built entirely of brass, it mounts on dash panel and is guaranteed for life of truck. Simple to operate . . . easy to install.



Manufactured and Sold by  
**HIGHWAY EQUIPMENT, INC.**  
Oak and Harrison Sts. Michigan City, Ind.

—More Profits  
per Job with  
**HEIL**



### Bodies and Hoists

Safe — dependable — complete line for all types of service. Ask for free catalog.

## THE HEIL CO.

Milwaukee, Wisconsin      Hillside, New Jersey  
Hoists — Bodies — Tanks — Road Scrapers — Snow Plows  
Bottle Washers — Dehydrators — Oil Burners — Water Systems

### JONES PORTABLE TACHOMETER



The world's largest operators of commercial vehicles use Jones Portable Tachometers to check engine speeds for tune-ups, and setting governors, etc. Here are a few: Standard Oil Co., of La., N. J., N. Y.; Shell Petroleum Co., Atlantic Refining Company, Tidewater

Oil Company, Keeshin Motor Express, Mack Trucks, Brockway, U. S. Navy.

Direct, instantaneous reading  
**JONES-MOTROLA-STAMFORD, CONN.**  
432 FAIRFIELD AVENUE

## GUARANTEED DIRECTIONAL SIGNALS TELEOPTIC



Hundreds of fleet operators know the economy of Teleoptic signals. Join them by writing for our catalog.

**TELEOPTIC CO.**  
RACINE, WIS.

(CONTINUED FROM PAGE 115)  
major reason for our vehicles going 25,000,000 miles without a fatal accident. The saving in direct operating costs effected by the throttle stop, if estimated at only 10 per cent, amounts to \$16,000 per year in our light car fleet. Its effect can be seen not only in increased gas mileage, but also in the increased life of tires, motors and all mechanical parts.

### 6. Maintain Your Own Equipment

We have tried letting private garages maintain our equipment, but it proved unsatisfactory, both in cost and in equipment condition. As a result, we not only do our own maintenance in headquarter cities, but we have traveling mechanics who spend their time visiting the smaller towns where equipment is located. They have trucks well equipped with shop tools and during scheduled visits, all necessary work is done to vehicles in each town to keep them in good condition until the next routine visit. In the event of an accident or other emergency, the traveling mechanic may make a special trip. Repairs may be made by public garages only when authorized by the Division Garage Superintendent.

### 7. Preventive Maintenance

Although this is one of the most important requirements of efficient and economical operation, the scope of this article does not permit its being discussed with any degree of completeness. Briefly, our whole automotive setup is based on thorough periodic inspections using the best available instruments. This is supplemented by written reports from the driver. The aim, however, is to do such a thorough job at each inspection that there will be no failures during the interval.

### 8. Miscellaneous Economy Items

There are many smaller things that we have found to make for economy of operation. I will list a few of them:

- (a) Specify "economy" motors and "economy" axle ratios for light duty vehicles when available.
- (b) Use high temperature thermostats in all vehicles, to increase gas mileage and reduce engine wear.
- (c) Use oil bath air cleaners on all vehicles to increase engine life.
- (d) Use oil filters on all vehicles

## AUSTIN

THE ACCEPTED STANDARD

### Fifth Wheels

### Landing Gears

### Pintle Hooks

**Austin Trailer Equipment Company**  
Muskegon, Michigan

Manufacturers of Engineered Trailer Products

## Dart Trucks

### HEAVY DUTY FOR OFF THE HIGHWAY SERVICE

— Specially Designed for —  
Coal Mining—Iron Ore Mining—Copper Mining—Pit and Quarry—Logging—Oil Fields—Etc.

It Costs No More for Trucks Specially Built to Fit Your Needs. Have Our Engineers Visit and Analyze Your Operation.

**DART TRUCK COMPANY**  
KANSAS CITY, MO.



### GENERAL OIL FILTER

Announces a  
Sensational  
CARTRIDGE

- Filters Faster
  - More Efficient
  - Less Expensive
- Write for details and  
Special Fleet Prices

**GENERAL FILTERS, Inc.** 9091 Aptline Detroit

## FLY-BALL GOVERNORS

### FOR ALL MAKES AND MODELS OF VEHICLES

**The Pierce Governor Company**  
ANDERSON, INDIANA, U. S. A.

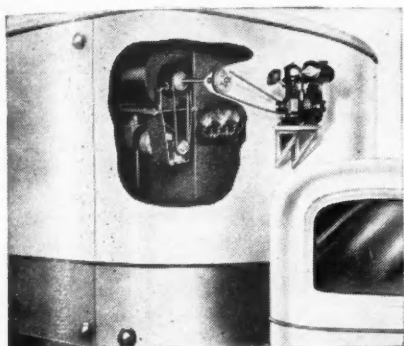
to increase engine life and reduce oil costs.

(e) Use light oils for better gas mileage and improved lubrication.

(f) Use 6-ply tires on all half-ton trucks, but not on passenger cars.

(g) Use truck tires of ample capacity—oversize is more economical than undersize.

(h) Use retreaded tires if carefully selected and conditioned by an expert, and use them in selected places.



## NEW! . . the D & G SPRAY TYPE Refrigerating Unit

Excess cooling capacity — Clutch Release for easy starting—Direct Cooling by Brine Spray, no fins — Ball Bearings throughout — Oversize, self priming bronze fitted pump and other features. Write for complete facts.

**DROMGOLD and GLENN**

1919 McCormick Bldg., Chicago, Ill.

## DEVILBISS

Spray-Painting Equipment—Spray Booths—Canopy Exhaust Systems—Exhaust Fans—Air Compressors—Hose and Hose Connections—Oil Guns.

Write for catalog

**THE DEVILBISS COMPANY  
TOLEDO, OHIO**

Distributors or direct sales and service representatives available everywhere.

## Precision-built AUTOCAR TRUCKS

SHORT-WHEELBASE  
OR CONVENTIONAL  
GASOLINE OR  
DIESEL  
IN ALL  
CAPACITIES



ARDMORE, PA. AND LEADING CITIES

## BIG ENOUGH

• This is space enough to tell you that Fitzgerald Bulldog Gaskets are best for modern heavy duty service.

THE FITZGERALD MFG. CO., TORRINGTON, CONN.

**FITZGERALD  
GASKETS**

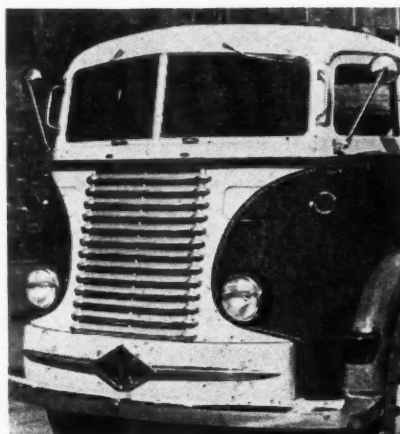
(i) Put pull-back springs on carburetor chokes to prevent their being left out.

(j) Put lock caps on gas tanks so all the fuel will get to the carburetor.

(k) Arrange for the Garage Superintendent to pass on all automotive charges incurred outside the garage. If he is held responsible for the cost, he is entitled to know all the charges made against his accounts.

(l) Budget for each garage the monthly expenditure for the various accounts and keep the foreman posted each month by tabulations and impressive curves showing how actual expenditures compare with the budget.

(m) Keep accurate records of the gas and oil mileage of each vehicle. The carburetor holds the purse strings of half of the expenditure for operation and maintenance and hence gasoline mileage deserves more attention than any other phase of maintenance.



Diamond T has announced brilliant new die cast radiator grilles for the c.o.e. models

General Tire & Rubber Co. has announced the following appointments as district managers: R. L. Countryman, Chicago; T. C. Mundy, Memphis, and W. A. Morse, Kansas City. L. L. Cyganek will assist Mr. Countryman.

## WHY CHANGE OIL?

WHEN "OIL DOES NOT WEAR OUT"

U. S. BUREAU OF STANDARDS

Car, Truck, Tractor Owners — Stop wasting your money on needless oil changes! Keep oil clean and "oily" indefinitely. Our FREE booklet "Oil Facts" a revelation. Ask your dealer for a copy, or write to—**RECLAIMO MFG. COMPANY**  
2306 N. WESTERN AVE., DEPT. 20, CHICAGO, ILL.

For running-in-new and rebuilt engines use auxiliary lubricants containing "dag" Brand colloidal graphite.

**Acheson Colloids Corporation**

Port Huron  Michigan

\*REG. U. S. PAT. OFF.

## OXYLATOR

CUTS MAINTENANCE  
COST

CUTS FUEL COST

"The mechanical solution for crankcase dilution."

For detailed information and particulars, write—

**Oxylator Co.**  
Grand Rapids, Michigan

One of the most complete lines in the business—each tire built to give you more miles for less money.  
**THE GENERAL TIRE & RUBBER CO.**

AKRON, OHIO

In Canada—The General Tire & Rubber Co. of Canada, Limited, Toronto, Ontario

**GENERAL  
TRUCK TIRES**

THE ONLY

*burn-out* **PROOF**  
DIRECTIONAL SIGNAL SWITCH



PAT. PEND.

Unconditionally  
GUARANTEED!

**SOLVED!**...your signal switch troubles. Install as a replacement for any make of directional signals or with a complete set of Signal-Stats. Ask your jobber for further information or write

**SIGNAL-STAT CORPORATION**  
59-79 PEARL STREET  
BROOKLYN, N. Y.



# Advertisers' Index

This Advertisers' Index is published as a convenience, and not as part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.

AC Spark Plug Div. General Motors Corp. .... 51-81			
Acheson Colloids Corp. .... 117			
Alan Wood Steel Co. .... 111			
Albertson & Co., Inc. .... 64			
Aluminum Company of America .... 83-3rd Cover			
American Automatic Devices Co. .... 109			
American Chain & Cable Co., Inc. .... 107			
American Hammered Piston Ring Div. of Koppers Co. .... 8			
Anthony Co. .... 106			
Armstrong-Victor .... 113			
Austin Trailer Equipment Co. .... 116			
Autocar .... 117			
Autopulse Corp. .... 60			
Available Truck Co. .... 115			
Baker Ice Machine Co. .... 106			
Baldor Electric Co. .... 114			
Bendix Products Div. of Bendix Aviation Corp. .... 39			
Bibb Mfg. Co. .... 79			
Blackhawk Mfg. Co. .... 7			
Blood Brothers Machine Co. .... 108			
Bowser & Co., S. F. .... 112			
Brown-Lipe Gear Co. .... 119			
Carter Carburetor Corp. .... 12			
Champion Spark Plug Co. .... 9			
Chevrolet Motor Div. General Motors Sales Corp. .... 85			
Chicago Lock Co. .... 109			
Cole-Hersee Co. .... 109			
Connecticut Telephone & Electric Corp. .... 114			
Cummins Engine Co. .... 1			
Curran Corp. .... 103			
Dart Truck Co. .... 116			
Delco Brake Div. General Motors Corp. .... 101			
Deluxe Products Corp. .... 71			
De Vilbiss Co., The .... 117			
Diesel Engine Div. General Motors Sales Corp. .... 104-105			
Ditzler Color Co. .... 6			
Dodge Div. of Chrysler Corp. .... 2nd Cover			
Dole Valve Co. .... 107			
Do-Ray Lamp Co. .... 72			
Dromgold & Glenn .... 117			
Dry-Zero Corp. .... 45			
Du Pont de Nemours & Co., E. I., Inc., Fabrikoid Division .... 15			
Eclipse Machine Div. Bendix Aviation Corp. .... 78			
Eberhard Mfg. Co. (Div. of the Eastern Malleable Iron Co.) .... 112			
Edwards Iron Works .... 58			
Electric Auto-Lite Co., The .... 13			
Electric Storage Battery Co. .... 41			
Ethyl Gasoline Corp. .... 97			
Exide Batteries .... 41			
Federal-Mogul Corp. .... 88			
Federal Motor Truck Co. .... 43			
Fitzgerald Mfg. Co. .... 117			
Ford Motor Co. .... 91			
Four Wheel Drive Auto Co. .... Back Cover			
Frink, Carl H., Inc. .... 112			
Fruehauf Trailer Co. .... 69			
Fuller Mfg. Co. .... 116			
Gar Wood Industries, Inc. .... 93			
General Electric Co. .... 99			
General Filters, Inc. .... 116			
General Tire & Rubber Co. .... 117			
Globe-Union, Inc. .... 47			
Goodrich Co., The B. F. .... 120			
Goodyear Tire & Rubber Co. .... 2			
Gramm Trailer Div. Gramm Motor Truck Corp. .... 112			
Hall Mfg. Co. .... 114			
Hansen Mfg. Co., A. L. .... 52			
Heil Co., The .... 116			
Hein-Werner Motor Parts Corp. .... 87			
Hercules Motors Corp. .... 63			
Highway Equipment, Inc. .... 116			
Highway Trailer Co. .... 111			
Holland Hitch Co. .... 106			
Hoof Products Co. .... 112			
International Harvester Co., Inc. .... 16			
Jones-Motrola .... 116			
Joyce-Cridland Co. .... 62			
Kathanode Corp. .... 114			
K-D Lamp Co. .... 3			
Karpex Mfg. Co. .... 112			
Kellogg Div. of the American Brake Shoe & Foundry Co. .... 74			
Kingham Trailer Co. .... 114			
Kinnear Mfg. Co. .... 115			
Koppers Co., American Hammered Piston Ring Div. .... 8			
Lee & Son Co., K. O. .... 111			
Leibing Automotive Devices, Inc. .... 110			
Lipe, Inc., W. C. .... 73			
Lubri-Zol Corp. .... 49			
McQuay-Norris Mfg. Co. .... 14			
Mack Trucks, Inc. .... 94			
Marmon-Herrington, Inc. .... 82			
Meehanite Research Institute. .... 115			
Michiana Products Corp. .... 114			
Midland Steel Products Co. .... 65			
Miley Co., L. J. .... 108			
Miller Mfg. Co. .... 115			
Mobile Refrigeration, Inc. .... 112			
Motor Improvements, Inc. .... 100			
Motor State Products Co. .... 108			
Nagle Equipment Corp. Ted .... 109			
Oshkosh Motor Trucks, Inc. .... 114			
Oxylator Co. .... 117			
Parish Pressed Steel Co. .... 119			
Pierce Governor Co., The .... 116			
Pines Winterfront Co. .... 66			
Prest-O-Lite Battery Co., Inc. .... 102			
Rapids Products Co., Inc. .... 115			
Raybestos Div. of Raybestos-Manhattan, Inc. .... 59			
Reclamo Mfg. Co. .... 117			
Reo Motor Car Co. .... Front Cover			
Republic Steel Corp. .... 114			
S K F Industries, Inc. .... 95			
Safety Speed Control Co. .... 111			
Salisbury Axle Co. .... 119			
Schrader's Son, A. Div of Scovill Mfg. Co. .... 98			
Sealed Power Corp. .... 53			
Service Recorder Co. .... 54			
Sherwin-Williams Co. .... 55			
Shuler-Axle Co., Inc. .... 115			
Signal-Stat Corp. .... 117			
Simplex Products Corp. .... 86			
Snap-On Tools Corp. .... 3			
Speedway Mfg. Co. .... 115			
Spicer Mfg. Corp. .... 119			
Standard Oil Co. (Indiana) .... 11			
Sterling Motors Corp. .... 110			
Stewart-Warner Corp. .... 68			
Stuart Oil Co., D. A. .... 110			
Teleoptic Co., The .... 116			
Texas Co., The .... 4-5			
Thermoid Co. .... 61			
Thornton Tandem Co. .... 80			
Timken-Detroit Axle Co. .... 70			
Timken Roller Bearing Co. .... 77			
Trailer Company of America. .... 75			
U S L Battery Corp. .... 96			
United States Asbestos Div. of Raybestos-Manhattan, Inc. .... 56-57			
Valley Electric Co. .... 114			
Veeder-Root, Inc. .... 108			
Vickers Power Brake Co., Inc. .... 113			
Victor Mfg. & Gasket Co. .... 113			
Wagner Electric Corp. .... 67			
Watkins Babbitting Service .. 88			
Waukesha Motor Co. .... 112			
Whitehead Stamping Co. .... 111			
White Motor Co. .... 10			
Witteck Mfg. Co. .... 112			
Willard Storage Battery Co. .... 92			
Zollner Machine Works .... 115			